

THE
FAR EASTERN REVIEW
FINANCE ENGINEERING COMMERCE



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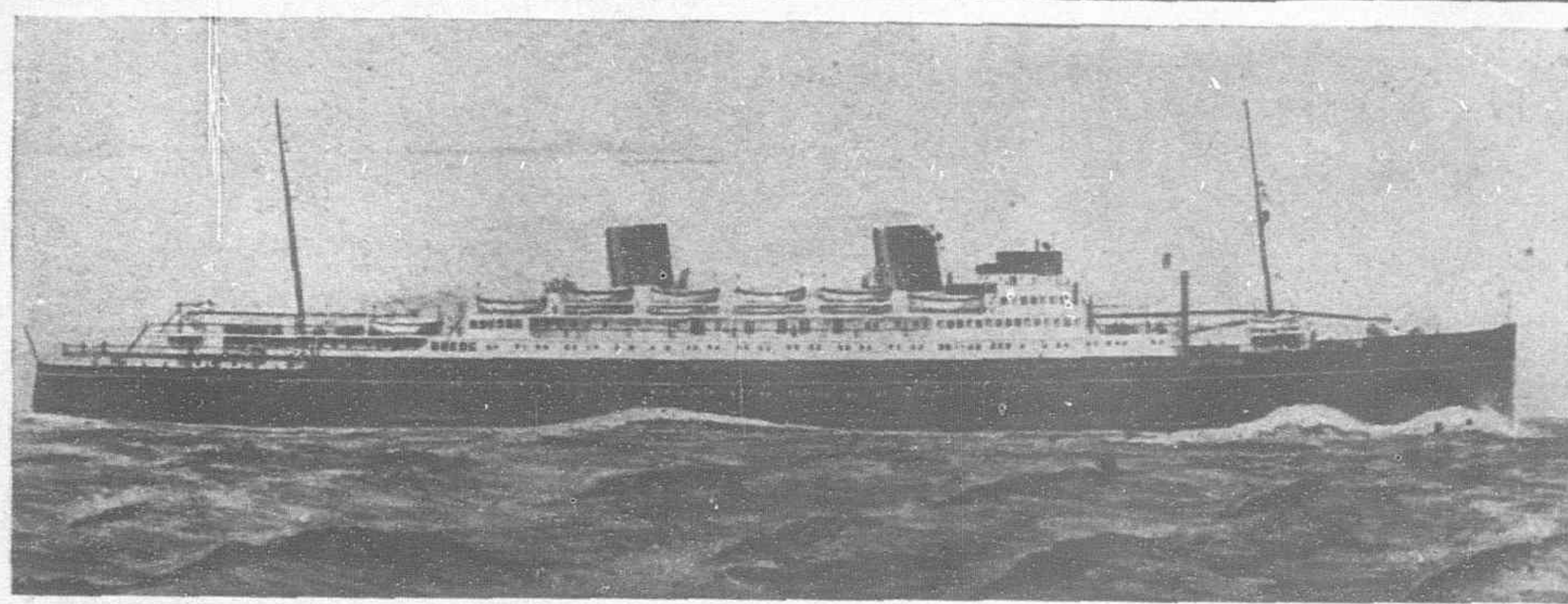
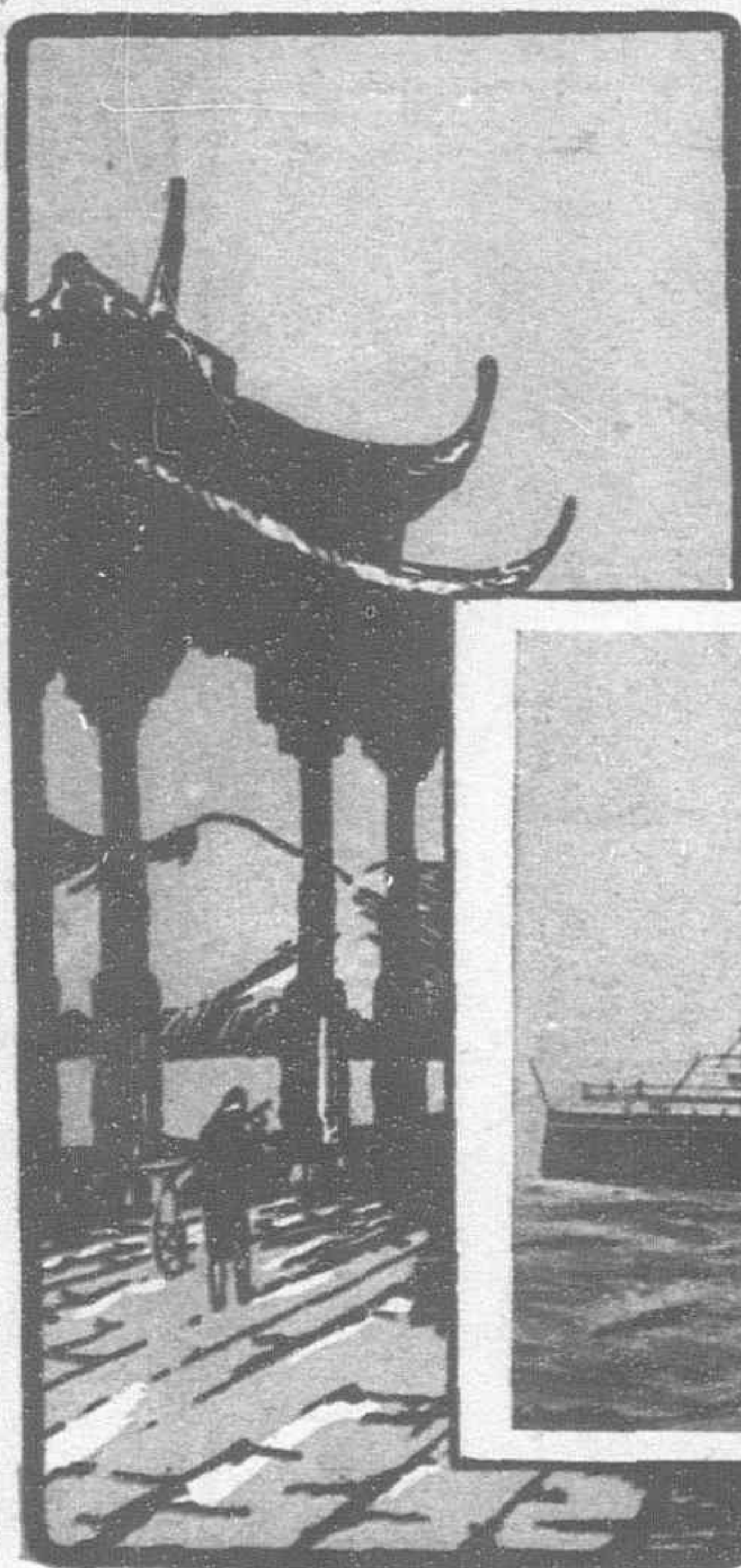
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MANCHURIA

The Discussions at the Williamstown Institute of Politics

THE eighth session of The Institute of Politics held at Williamstown, during the month of August, was notable for the admirable handling of Far Eastern problems at the Round Table presided over by Professor George H. Blakeslee. Coming at a time when the Manchurian situation occupied the attention of the world, the session provided an exceptional opportunity for China and Japan to present fully their respective sides of the dispute. China's case was skilfully set forth by Dr. C. C. Wu, representing the Nationalist Government while Japan's position was clearly and ably defined by Hirose Saito, Japanese Consul General at New York and Mr. M. Zumoto, the veteran Japanese journalist. The Manchurian question was discussed with an amazing frankness and in such a conciliatory and compromising spirit that there should be no further misunderstanding of the vital issues involved.

Dr. Wu characterized Japan's policy in Manchuria as "a flagrant violation of China's sovereignty—a pernicious intervention in the affairs of another state." He concluded his argument by an appeal to the American people and Government to intervene on the grounds that the Washington Treaty has been violated by Japan's advice to Chang Hsueh-liang. "Is the Nine Power Treaty to become a scrap of paper," he asked? Reminding his audience that the Great War was precipitated because Germany made a scrap of paper of the treaty guaranteeing the neutrality of Belgium, he said that to date there had been no protest by any of the signatories to the Nine Power Treaty against Japan's violation of this pact. Ten years ago, such an appeal would have stirred an American audience. To-day, it leaves us cold. The Nine Power Treaty was designed to take the place of the Open Door Doctrine and give a new charter of rights to China. It commits the signatories to a definite line of conduct toward China but does not provide that any one Power shall take upon itself the defense or the maintenance of the treaty. The American Government is not called upon to intervene single-handed in a dispute which concerns equally all the other signatories; neither is it called upon to take the initiative in mediation when all the other interested Powers, including China, have their own court at The Hague and Geneva for adjudicating such questions.

In presenting their case before an American audience, the spokesmen for China totally ignore the fact that the Manchurian problem is a three cornered one and that no solution is worth the paper it is written upon unless Soviet Russia subscribes to its conditions. As long as Moscow is unrecognized by the United States and Mongolia remains within the sphere of the Soviet system, the American Government cannot become involved in any dispute arising from the conflicting claims of China, Japan and Russia in these regions. Japan's strategic position in South Manchuria is determined solely by Russia's domination of Outer Mongolia and Northern Manchuria. The fundamental Russian policy in Mongolia is clearly explained in the conversations and exchange of notes which took place between Minister Reinsch and Prince Kudacheff in 1916 on the occasion of Russia's protest against the construction by an American firm of the Suiyuan-Ningsia railway. In his letter to the Secretary of State dated October 19, 1916, Minister Reinsch said: "In the conversation, the Russian Minister stated to me that his Government is opposed to Chinese colonization in any part of Mongolia." In a further communication dated October 31,

1916, Minister Reinsch informed the State Department as follows:

"Prince Kudacheff expressed himself very fully and frankly in explanation of the Russian policy to treat Mongolia as a natural barrier against Chinese colonization movements in the direction of the Russian dominions. He stated that the *status quo* in Mongolia, by which is meant the permanence of that country in a pastoral state with sparse population, was essential to the feeling of security of his country; therefore his Government could not look with indifference upon any enterprise which would induce the development of Chinese colonization northward in Mongolia."

This basic policy of the old Russian régime is being adhered to by the Soviet Government and with the tacit consent of China. This fact was clearly brought out at Williamstown when Dr. Wu was requested to explain the Nationalist attitude in regard to Mongolia. Dr. Wu admitted that there is at present no harmony between Outer Mongolia and the Chinese Republic and that the Mongol Government was very much under the influence of Moscow. He further declared that "the policy of the Nationalist Government would be to let the Mongols have a full measure of self-determination; a free choice as to what their status shall be."

Such a frank admission of China's weakness in Mongolia completely justifies Japan's determination to maintain at all hazards her strategic position in South Manchuria and makes impossible any solution of the Manchuria problem along economic lines. This one admission undermines China's case against Japan.

There is evidence in plenty that Moscow is not only tightening its hold upon Outer Mongolia, Chinese Turkestan and Tibet, but is effectually shutting Chinese and foreign trade out of vast areas that come under the recognized sovereignty of the Chinese Republic. Russia has closed the age-old "open door" on the borders of the Gobi; the old trade routes are entirely blocked and Chinese territory is commercially dominated by the Russian State Monopoly. The only obstacle to the extension of Russian domination over Inner Mongolia, Northern Manchuria and Kansu, is the presence of Japan's armies in South Manchuria and Kwantung. Once this guarantee of China's territorial integrity is withdrawn or impaired, it is only a question of time and opportunity when Moscow will move along the same old familiar lines that has characterized Russian policy in Asia for centuries.

For several years past, THE FAR EASTERN REVIEW has emphasized the strategic angle of the Manchuria problem as a reason why the American Government should remain neutral in the event of a crisis being precipitated in these regions as a result of China's refusal to be bound by the 1915 treaties. The strategic and economic issues involved bear such a close resemblance to our own problems in the Caribbean and Central America that Americans cannot fairly take issue with or condemn Japan for applying the same policy in regions where her own security is at stake. If the United States were placed in Japan's position, her China policy would follow the same path as Japan's has done.

The American people sympathize with China but the logic of the facts compel them to be just to Japan. It is in this spirit that the following papers on the Manchurian question were read before the Williamstown Institute of Politics by the Publisher of this magazine,

The Secret Sino-Russian Alliance of 1896

The Key to the Chinese Puzzle

By Geo. Bronson Rea

THE Manchurian dispute simmers down to just this: the Chinese insist that Japan's rights in Manchuria are invalid because they were extracted under pressure at the time of the Twenty One Demands. Japan stands firmly on the sanctity of these treaties. This question was thoroughly thrashed out at the Washington Conference, where Japan refused to budge from her position and the Chinese reserved the right to reopen the question on all future appropriate occasions. The issue is therefore clearcut, one that can be settled only by amicable arbitration between the interested parties, or, failing this, by a resort to arms.

If the principle underlying the Chinese position is admitted, an extremely dangerous precedent would be established. Some very recent wars would have to be fought all over again and many established rights throughout the world surrendered. The Chinese are on strong ground when they rest their case against Japan on the Twenty One Demands. But there is another side to the story of these Demands. The full truth about this incident has never been told. Until such time as the inside history of those days are revealed by some competent authority, it is well for Americans to reserve judgment upon a characteristic piece of secret Oriental diplomacy designed to hoodwink the outside world. Dr. Sun Yat-sen repeatedly declared that the Twenty One Demands were a put-up job, invited and even drafted by Yuan Shih-kai himself; the price Yuan was willing to pay Japan for recognizing him as Emperor. Viscount Kato also publicly admitted that the ultimatum was invited by Yuan to save his face with the Chinese people in conceding to the Demands. This fact is strengthened by the official dispatches of the American Minister at Peking to the State Department, who reported that the Chinese were surprised at the leniency of the ultimatum, as it demanded much less than they had already committed themselves to concede. Minister Reinsch further reported that the Chinese were astonished and chagrined to find that the Demands of Group 5 were not urged in the ultimatum, but their annoyance at having unnecessarily committed themselves too far was compensated by a sense of relief because the terms of the ultimatum were so moderate. So there is every reason for the belief that there was something behind the presentation of these Demands and the ultimatum, that will not bear too close a scrutiny.

In any discussion over Manchuria, the reason for Japan's presence there must be considered. What is Japan doing in Manchuria? How did she get in there in the first place? When we go behind the Twenty One Demands to the Portsmouth Peace Treaty, to the Russo-Japanese War and the causes which led up to it, the picture changes.

At the Washington Conference, China's Chief Delegate, Dr. Wellington Koo, filed with the Secretary of State, a document that was read out in open session and now forms part of the official records of the Conference. This document was the telegraphic summary of the text of a secret treaty of alliance between China and Russia signed at St. Petersburg in May, 1896, between Prince Lobanoff and Li Hung-chang in which China voluntarily surrendered her sovereignty in Manchuria to her Ally in order that Japan might be punished for her recent victory over China. As this treaty is the key to the whole Far Eastern puzzle, it is well that its text should be given in full. It reads:

THE SECRET TREATY.

ARTICLE I.

Every aggression directed by Japan, whether against Russian territory in Eastern Asia, or against the territory of China or that of Korea, shall be regarded as necessarily bringing about the immediate application of the present treaty.

In this case the two High Contracting Parties engage to support each other reciprocally by all the land and sea forces of which they can dispose at that moment, and to assist each other as much as possible for the victualling of their respective forces.

ARTICLE II.

As soon as the two High Contracting Parties shall be engaged in common action no treaty of peace with the adverse party can be concluded by one of them without the assent of the other.

ARTICLE III.

During the military operations all the ports of China shall, in case of necessity, be open to Russian warships, which shall find there on the part of the Chinese authorities all the assistance of which they may stand in need.

ARTICLE IV.

In order to facilitate the access of the Russian land troops to the menaced points, and to ensure their means of subsistence, the Chinese Government consents to the construction of a railway line across the Chinese provinces of the Amur and of Guirin (Kirin) in the direction of Vladivostok. The junction of this railway with the Russian railway shall not serve as a pretext for any encroachment on Chinese territory nor for any infringement of the rights of sovereignty of his Majesty the Emperor of China. The construction and exploitation of this railway shall be accorded to the Russo-Chinese Bank, and the clauses of the contract which shall be concluded for this purpose shall be duly discussed between the Chinese Minister in St. Petersburg and the Russo-Chinese Bank.

ARTICLE V.

It is understood that in time of war, as indicated in Article I., Russia shall have the free use of the railway mentioned in Article IV, for the transport and provisioning of her troops. In time of peace Russia shall have the same right for the transit of her troops and stores, with stoppages, which shall not be justified by any other motive than the needs of the transport service.

ARTICLE VI.

The present treaty shall come into force on the day when the contract stipulated in Article IV shall have been confirmed by his majesty the Emperor of China. It shall have from then force and value for a period of fifteen years. Six months before the expiration of this term the two High Contracting Parties shall deliberate concerning the prolongation of this treaty.

On its face, this was a purely defensive alliance, but the clause providing for the construction of a railway across the provinces of Amur and Kirin "*in order to facilitate the access of the Russian land troops to the menaced points and to insure their means of subsistence*" (and, it might be added, provisioning them with war materials) transforms the treaty into an offensive instrument deliberately provocative in its conception and operation. The Chinese Eastern Railway and its subsequent South Manchuria Branch were therefore essentially and primarily military in character, conceived, designed and constructed for the express purpose of transporting Russian troops to strategic points in Chinese territory as the first step in a war with Japan. The terms of the carefully camouflaged commercial concession for the construction of the Chinese Eastern line signed in September, four months later, were given full publicity, but the Master Treaty of Alliance defining the real purpose of the line was maintained a profound secret. On the signing of the innocuous Chinese Eastern Railway convention the Master Treaty became operative.

China faithfully discharged her commitments under the secret treaty by handing over her territory to Russia under conditions which gave the latter full sovereignty and jurisdiction over the railway zone. The railway was hurriedly pushed through to completion and two years later, after receiving a bribe of Taels 500,000, Li Hung-chang leased to his Ally the Liaotung Peninsula and extended the Chinese Eastern Railway from Harbin to Port Arthur. How much Li Hung-chang actually received in bribes for selling his country's birthright, may never be known. Sir Valentine Chirol, the famous British authority on the Far East, in his latest book, states that when Li returned to Peking after his trip around the world, the Empress Dowager refused to receive him until he had paid over the sum of £800,000.

The evidence is before us in the Memoirs of Count Witte and in the Official Russian Archives, that Count Witte paid Li Hung-chang the sum of Taels 500,000 to sign the Liaotung Lease and the rights to the South Manchuria Railway. Chang Yin-yuan, another high Chinese official received Taels 250,000. The

official correspondence of Mr. Denby, the American Minister to Peking during this period, reveals how completely Li Hung-chang fooled the other Powers and how Li accepted the bribe from Russia at a time when he knew that the alienation of the Liaotung Peninsula would be followed by similar demands on the part of other powers. Li Hung-chang was obsessed with but one idea; to be revenged upon Japan for his defeat and humiliation in 1895 and he gladly betrayed his country and brought upon her further alienations of territory by consenting to the installation of Russia in Liaotung as the one certain way to assure his revenge. For, it goes without saying, that the main Chinese Eastern Railway traversing Northern Manchuria could not materially facilitate the transport of the Russian armies to points on the frontier in conformity with the terms of the Secret Treaty of Alliance. Only by extending the line to Port Arthur and bringing the Russian armies close to the Korean frontier could the real objective of the secret alliance be attained. Li Hung-chang knew exactly what he was doing when he let the Russian Bear into the tip of the Liaotung Peninsula. He knew that he would have to pay the price to the other Powers, a price he gladly paid in order to place his Ally in the position where she could force the issue with Japan. This, in plain words, was the initial step in the partition of China into spheres of influence. China's subsequent woes arising from the "battle of concessions" and creation of spheres of influence delimited by foreign controlled railways, were the direct result of Li Hung-chang's treachery, or patriotism, if you will. Li created a strategic menace to Great Britain and Japan, and every subsequent move made on the chess-board of China, arose from Britain's and Japan's determination to checkmate the Russian moves.

Within two years, Port Arthur was converted into an impregnable naval base, the headquarters of a powerful Russian fleet in the Pacific, a direct menace to the British Empire in Asia and, an open challenge to Japan. Russian armies poured into Manchuria and occupied all the strategic centers down to Feng-whangchen dominating the Korean border. The province was created into a Russian Viceroyalty, closed to foreign trade and travel and held as a private Russian preserve. Kuropatkin admits in his memoirs that it was Russia's intention to transform Manchuria into another Bokhara. Caught between the giant jaws of the Russian nut-cracker, Japan was forced to fight to preserve her independence.

In the meantime, John Hay, the American secretary of State, had created the Open Door Doctrine, Professor Dennis in his new book entitled "Adventures in American Diplomacy," gives us the inside history of the negotiations leading up to the establishment of this doctrine. China was not a party to it. She never officially recognized the Open Door doctrine. She could not and remain faithful to her secret treaty with Russia. Now, when the question of Russia's position in Manchuria became acute, Japan promptly asked the American Government what its policy would be in view of Russia's violation of her public pledges and promises. Here, was a real test of what the United States meant by its China policy and by its support of the entity of China. Secretary Hay was obliged to reply that "we were not at present prepared to attempt singly or in concert with other Powers, to enforce these views by any demonstration which could present a character of hostility to any other Power." In other words, we were not prepared to fight for what we knew was right. The United States was unable and unwilling to go to war for the protection of China and the maintenance of the Open Door doctrine. We refused to defend the Open Door and Japan took that rôle upon herself. In response to a direct appeal from China that America exercise her good offices to secure a settlement of the Manchurian question and the withdrawal of the Russian troops, the United States replied that she did not know enough about the problems involved and, that in any case, Russia had not intimated a willingness to accept her good offices. In other words after creating the Open Door doctrine, the United States declined to uphold it, throwing the full load of opposing Russia upon the shoulders of Japan. Now, at that time China had a fair sized modern army of some 150,000 men under the command of Yuan Shih-kai. Japan naturally expected the Chinese army to co-operate in ousting Russia from Chinese territory. The Chinese army however remained absolutely neutral while Japan fought the battle for both countries. There is only one deduction to be made from this fact. China's real enemy was Japan, and she clung to the ring-side hoping that Russia with her superior military machine, would do the job she was unable to do for herself. (The

only Chinese support Japan received during the war, came from the bands of Hunghutzes or Chinese outlaws of Manchuria. The leader of one of these bands was Chang Tso-lin. He was the only Chinese who fought on the side of Japan to save his country from passing under the yoke of Russia).

The Chinese Government went through the farce of proclaiming its neutrality, warning the combatants that her sovereign rights and territory in the Three Eastern Provinces must be restored to her no matter which belligerent should be victorious. As China had willingly surrendered these rights to Russia, the warning was intended solely for Japan. Japan sacrificed over 200,000 men and nearly bankrupted herself in the struggle that followed. At the end of the war, Japan went to Portsmouth in complete ignorance of the secret treaty of alliance between China and Russia and was compelled to forego her demands for a cash indemnity that would have compensated her in part for her tremendous sacrifices. Instead Japan was forced to accept as the spoils of victory, the Russian rights to the South Manchurian Railway and the short term lease to the Liaotung Peninsula. The railway had been systematically destroyed by the Russians in their retreat northwards. Over the torn-up road bed and temporary wooden bridges, the Japanese army had hastily laid a light narrow gauge military line totally inadequate for handling the commerce of the territory. Japan got nothing for her sacrifices but a short-term franchise to a railway right-of-way and had to start in immediately to rebuild and equip an entirely new line.

China, the Ally of Russia, who had brought Russia into Manchuria to crush Japan, came out of the war as the innocent and injured victim. It is difficult to moralize or speculate on what might have been, but had the terms of the secret Li-Lobanoff treaty of alliance been known at Portsmouth, China would have had to pay any indemnity Japan may have demanded or imposed. It is also fair to assume that this would have taken the form of a complete cession of China's sovereign rights over South Manchuria and perhaps other territorial concessions. China escaped scot free and even had the territory she had, by all established laws of warfare forfeited, returned to her.

The secrecy surrounding the existence of this treaty was not dispelled until the date of its expiration in 1911, when the full text was published in the "London Telegraph." As neither the Chinese or the Russian Governments officially admitted the authenticity of the treaty, its publication passed unnoticed. Some years later, a French diplomat, M. Gerrard referred in his memoirs to the existence of the treaty, stating that he had held it in his hands and read it. This, also, was unofficial. At the Paris Peace Conference, however, Sazanoff, former Czarist Minister of Foreign Affairs, submitted a copy of the treaty to the Big Four in order to protect certain Russian rights in Manchuria. As Russia was not represented at the Conference, this also was unofficial and does not appear in the records. Then came the Memoirs of Count Witte, who frankly and fully explained just how the treaty had been signed. This, also, was unofficial. So we come to the Washington Conference. When Secretary Hughes called upon the delegates, to file with the Conference copies of all the treaties, secret and otherwise, connected with China, the Chinese delegates were constrained for the first time to take notice of this treaty. They did not have a copy of the text, so telegraphed to Peking for it. A summary was telegraphed them, and duly handed to Secretary Hughes by Dr. Wellington Koo. Mr. Hughes read the abridged text before the open conference and proceeded to the next order of business. Everybody was looking out the window admiring the scenery along the Potomac when the evidence was produced that clarified the events of that period and justified Japan and Great Britain in entering into their original alliance.

The minute that treaty was read out before the Conference, it constituted an official admission on the part of China that it had existed and accomplished its object. It was the first time that either party to the alliance officially admitted its existence. Now, when China, even at such a late date, confessed that she was a secret Ally of Russia during the Russo-Japanese war, she became immediately liable for any indemnity that Japan might demand. There is no statute of limitations to shield a nation from the consequences of its acts. New evidence compels revision of a verdict, so when China now refuses to admit the validity of the 1915 Treaty, she opens up a controversy that justifies Japan in going back to Portsmouth and reopening the whole Manchurian question.

It goes without saying that if the 1915 treaties are declared invalid by China, Japan's legal rights in Manchuria must be defined by the terms of the Portsmouth Peace Treaty. As the original lease to the Liaotung Peninsula expired in 1923, sovereignty over this territory would now rest with China. Without full jurisdiction and control over the deep water harbor and terminals of the railway, its further operation by the Japanese would be unprofitable and its control would have to be surrendered with the lease.

If China's contention holds good in regard to the 1915 treaty, there is nothing for Japan to do but accept an appraisal of the South Manchuria Railway and permit China to raise a foreign loan with which to purchase the properties. Japan would then be compelled to quietly fold up her tents and withdraw from the mainland of Asia. Or, if the 1915 treaty is invalid, Japan is forced back upon the Treaty of Portsmouth to defend her position and, in view of China's confession at Washington it would seem that Japan has a legal right to demand a reopening of the whole question and exact from China the compensation she was justly entitled to but buncoed out of at Portsmouth. It is either one or the other. Japan's position may be morally weak when China stands on the invalidity of the treaties arising from the Twenty One Demands, but if we go behind that date, China has not a leg a stand upon, if Japan invokes the secret treaty of 1896 as a reason for her determination to remain in Manchuria. In presenting before an American audience what I consider to be a common-sense interpretation of the Manchurian problem, you may ask what interest I have in taking this viewpoint. Ever since the text of the secret Sino-Russian treaty of alliance came into my hands at the Paris Peace Conference, I realized that this was the missing link, the key to the Chinese puzzle, the one document which explained and clarified all the subsequent moves on the Asiatic chessboard. With a deep insight into the problems confronting Japan in working out her destiny along peaceful lines, I have seen how the march of events would again create a situation where all the good-will and peaceful intentions in the world would not avert a crisis in the Far East. Japan cannot escape a showdown as long as China and Russia adhere to their present programs. Japan has fought two wars over Manchuria. She may be compelled to fight a third. She may be right or she may be wrong, but right or wrong, the world is entitled to hear and weigh the evidence on both sides of the case. I am interested in this

problem from a purely American standpoint, for if another war is fought in the Far East, the United States will again become the battle ground for the propagandists of both sides. A determined attempt will be made to align us on the side of China, even to the extent of fighting her battles. It has been tried once. It will be tried again. In my opinion, the United States is not concerned as to which nation rules Manchuria. The problems there are not of our making. They do not menace the peace or the security of our country. The issue is one between China, Japan and Russia; one that we will do well to keep out of, even as a peacemaker.

The peace of the Far East hinges on an amicable solution of the Manchurian problem. Japan will fight to defend her rights in that territory. These rights, acquired through great sacrifices, are vital to her continued existence as an independent nation. A crisis has been precipitated by the attitude of China and Japan is now taking the necessary steps to safeguard her position. In the welter of propaganda that will be injected into the controversy it is well that the American people should know all sides of the dispute.

In conclusion, the facts of history tell us that the railway the Chinese now glibly denounce as the instrument of Japan's imperialistic designs in Manchuria and Mongolia was constructed originally with Chinese consent in Chinese territory as the instrument for crushing the independence of Japan. That Japan is not a vassal of Russia to-day is no fault of China's. Japan paid for her rights to the South Manchuria Railway with the lives of over 200,000 of her Sons and bankrupted herself in the bargain, while the Chinese army maintained a discreet neutrality. Manchuria is watered by the blood of Japanese patriots. Their graves and battle-monuments dot the landscape from Port Arthur to Mukden; emblems of a great sacrifice the corrupt Manchu rulers of China forced upon Japan. These memorials are a constant reminder to Japan of China's weakness and duplicity. As they kneel or stand in reverent homage before these Holy Shrines, the Sons of Nippon give thanks to their heroic dead that the Flag of the Rising Sun still floats over their beloved Homeland. Had they failed, the Japanese of to-day, would be holding their own Day of National Mourning, ringed around with Russian bayonets and China herself would long ago have passed under the yoke of Moscow.

To understand the Japanese viewpoint it is essential that these truths be borne in mind.

American Interest in Manchuria

Harriman's Scheme to Compel Japan to Sell the South Manchuria Railway

An American Loan to the S.M.R.

By Geo. Bronson Rea

IT is difficult to understand the motives which guided the diplomacy of our State Department in Manchuria immediately after the expiration of the Russo-Japanese war, unless we read carefully the "Life of Willard Straight" By Herbert Croly and the "Biography of E. H. Harriman." These two men were responsible for the reversal of our traditionally friendly attitude towards Japan into one of suspicion, jealousy and dislike. Japan had staked her very existence on the plains of Manchuria. All she got at Portsmouth in compensation for her tremendous sacrifices, was the transfer to her control of the South Manchuria Railway and a short-term lease to the Liaotung Peninsula. The old broad-gauge Russian line had been torn up by the retreating armies, the bridges dynamited and the rolling stock carried north to Harbin. When the war ended, the railway was a temporary narrow-gauge military line laid on the old sleepers with improvised wooden bridges over the rivers. In effect, all that Japan took over from Russia was a right-of-way. The South Manchuria Railway had to be rebuilt and re-equipped from the road-bed up.

Into this picture steps Mr. E. H. Harriman, the most daring railway manipulator this country has produced. Harriman was obsessed with the dream of creating a round-the-world transportation scheme under his own control. Pursuing this will-o-the-wisp, he reached an understanding in July, 1905, with Marquis Ito and

Count Katsura, whereby he was to furnish the capital for the reconstruction of the South Manchuria Railway and the development of mines and industries in the railway zone. Japan was to retain a substantial interest in the line and exercise political control. On his return from Portsmouth, however, Baron Komura opposed the plan on the grounds that China's consent would have to be obtained and shortly afterwards a loan for the reconstruction of the line was obtained from Great Britain. But Harriman was not the type that took such a defeat laying down. To understand what followed, it is essential to read carefully the revelations in Willard Straight's biography. The disinterested student will become convinced after a perusal of the facts therein set forth, that our renewed championship of the doctrine we permitted Japan to defend alone, arose from a desire on the part of Secretary Knox to further the extravagant schemes of Harriman to gain control of the South Manchuria Railway.

Willard Straight was sent to Mukden as Consul General in order to advance Harriman's schemes. Straight had discussed with Harriman the possibility of American investments in Manchuria and had received a commission to submit to Harriman plans for the railway development of the province with American capital. The negotiations for a loan to China were the direct result of Straight's intimate association with the Manchurian authorities and of Harri-

man's interest in building or buying railway lines in Northeastern China as links in his grandiose project. In order to compel the Japanese to accept Harriman's terms to take over the South Manchuria line, Straight conceived the idea of negotiating the Chinchow-Aigun project in co-operation with British interests, in order to parallel the Japanese line and destroy its strategic and commercial value. Secretary Knox then used the Chinchow-Aigun concession to induce the other Powers to consent to the neutralization of all the Manchurian lines, hoping by this means to open the way for Harriman to attain his object. Practically all the opposition to this scheme came from Russia, who flatly rejected it and laid down the doctrine that China could build no railways within her own territory menacing Russia's strategic position on the Amur River. Although objecting to Knox's plan, Japan declared her willingness to participate in it with the other Powers.

Again thwarted in his plans, and recognizing that nothing could be done until Russia's consent was obtained, Harriman changed his tactics and tried to purchase the Chinese Eastern Railway from Russia as one means of bringing pressure upon the Japanese to sell the South Manchuria line. If this compulsion failed, the Chinchow-Aigun project was to serve the same purpose. In other words, Straight confesses that the Chinchow-Aigun concession was designed as a lever to compel Japan to sell the South Manchuria Railway to Harriman and, if this object could not be obtained, to build and use the completed line to destroy the commercial and strategic value of the Japanese line. These confessions reveal that the Manchurian policy of the American Government for several years subsequent to the termination of the Russo-Japanese War, was intimately related to Harriman's schemes. The whole force of our diplomacy, and publicity was concentrated upon depriving Japan of the fruits of her victory over Russia, in order that an American railway king could carry out an extravagant scheme, which, if it ever had succeeded, would sooner or later plunge the nation into hostilities.

So intimate was the connection between Harriman and Straight and so powerful the influence of the Railway King, that he goes so far as to state in his biography that he intended to have Straight appointed American Minister to Peking, but Straight declined to accept the honor because of his youth and inexperience.

These facts indicate how completely the American government had been misled over the real situation in Manchuria. For it goes without saying that had Gresham, Sherman, Hay, Knox, or any other high-minded American Secretary of State the slightest inkling of the terms of the secret treaty of alliance between China and Russia, their entire sympathy and support would have gone out to the nation which so whole-heartedly and without reservation accepted and subscribed to our Open Door Doctrine, and so heroically staked its very existence in restoring China's sovereignty over a territory that she had fairly forfeited. Had the existence of the Li-Lobanoff secret treaty of alliance been known to Roosevelt, his high conceptions of honor and his well-known friendship for Japan would never have permitted him to take such a leading rôle in bringing about the Portsmouth Peace Conference, except to see that full justice was done to Japan.

Japan Builds and Equips an American Railway

Let us go back to the time when the Japanese rejected Harriman's proposal and raised a loan of £20,000,000 in London to reconstruct and equip the South Manchuria Railway. What did the Japanese do with this loan? They went first to the British manufacturers with their requirements for rails, bridges, locomotives, cars and other equipment, giving them the first chance at the business. Time was the essential element in the contract. The British manufacturers could not guarantee delivery within six or eight months, so the Japanese took their inquiries to the United States. Mr. James A. Farrell, then head of the United States Steel Products Corporation, quoted lower prices than the British, promised immediate delivery and booked the order for the rails, bridge material and other steel work. The American Locomotive Company secured the orders for the locomotives; the Pullman Company furnished the passenger cars; other car manufacturers got the freight car business, while our railway equipment and machinery manufacturers scooped up the rest of the business. *We got it all.* Our British friends, controlling the ocean tonnage at that time, naturally resented our reaping the profits from the proceeds of their own loan and promptly took steps to take them away

from us by quoting such high freight rates that there was little left for the American manufacturer. Before the British knew what was going on, Mr. Farrell had chartered several steamers and organized his own steamship line. Every ton of American railway material and equipment that went to Manchuria was shipped on these steamers. The Japanese did for us what we have never been able to do for ourselves in the Orient. They built and equipped down to the last spike, an American railway that stands as the finest advertisement of our railway practice and engineering supremacy, anywhere outside the United States.

Let me tell you what this has meant to us in dollars and cents. Since the Japanese took over the South Manchuria Railway, they have purchased in the American market, materials of all kinds to the value of over \$50,000,000. In addition to this, individual Japanese industrial and mining concerns in Manchuria have purchased American equipment to the value of a further \$25,000,000, a total of approximately \$75,000,000. We loaned them no money. They paid cash.

Do you know what this means? The entire system of Chinese Government railways built from the proceeds of foreign loans is valued at approximately \$150,000,000. The countries furnishing the loans received in return about fifty per cent. of the total in orders for materials. In other words, the European nations who loaned the \$150,000,000 to China for railway construction, profited to the extent of \$75,000,000 in orders for materials. American manufacturers were not permitted to participate in this business. *We got nothing.*

Without our lending them a cent, the South Manchuria Railway Company and its allied Japanese industrial concerns, have purchased in the United States, railway and engineering materials to the same extent as though we had financed the entire system of loan-built Chinese Government railways! Yet all this time, while our manufacturers were excluded from sharing in the railway market of China Proper and were profiting from this splendid market in Manchuria, a group of financiers were intriguing to influence our government to support a concession designed to compel Japan to sell out the South Manchuria Railway to Harriman.

An American Loan to the S.M.R.

An intelligent answer to the question as to whether an American financial house should make a loan to the South Manchuria Railway Company, can only be made when the legality of Japan's position in Manchuria is taken out of international politics. Here we once more face the crux of the present problem as to the validity or invalidity of the 1915 treaties.

The American Government recognizes the validity of these treaties. Secretary Bryan in his note of March 13, 1915, to Baron Chinda, the Japanese Ambassador at Washington, raised no question as to the legitimacy of the Demands concerning Shantung, Eastern Mongolia or Manchuria. He frankly recognized that territorial contiguity creates special relations between Japan and these districts. As a matter of fact, the American Government protested only against such clauses of the Twenty One Demands as infringed the principle of equal trade opportunity by granting to Japan a monopoly of furnishing arms and munitions to China and of developing the province of Fukien, etc. When Minister Reinsch requested the State Department for a more explicit definition of what constituted Japan's special rights in Manchuria, he was informed, in effect, that it meant recognition of her legal rights based on the treaties, concessions, contracts and other agreements formally entered into by the two governments of China and Japan.

That this includes American recognition of the validity and legitimacy of the 1915 treaties, is clearly shown from the fact that the American consul at Dairen is under the jurisdiction of our Embassy at Tokyo. As far then as the American Government is concerned, it recognizes the legal rights of the South Manchuria Railway under the terms of the 1915 treaties and can not interpose any objection to an American loan to that enterprise.

However, when the Peking Government protested against such a loan on the grounds that the 1915 treaty is invalid, a very clear cut issue was created in which our Government could not take sides without intervening in a question that did not concern us further than to see that our treaty and trade rights in Manchuria are respected. The attitude of the Chinese Delegation at the Washington Conference in reserving the right to bring up the question of Japan's status in Manchuria on all subsequent occasions;

the fact that the Chinese did formally notify Japan of the termination of the original Liaotung Lease on its expiration in 1923, and that they again raised the issue in order to prevent an American loan to the South Manchuria Railway, has created a very definite and acute issue which can only be solved by some amicable agreement between China and Japan. Under these circumstances, it would be unwise for an American financial house to furnish a loan to the Japanese railway company at this time, notwithstanding that such a loan would be entirely legitimate. As such a loan would have to receive the approval of our State Department, such consent could not be extended without involving our Government in the dispute. Until there is proof that Japan has violated the Nine

Power Treaty signed at Washington, the American Government is not concerned in the dispute between China and Japan over Manchuria. The problems there do not concern us further than to see that our treaty rights are respected. We made no protest when Great Britain proclaimed a quasi-protectorate over Tibet, nor did we take any action when Soviet Russia amputated Mongolia from the rest of China. We may recognize that Manchuria is an integral part of China, but so is Tibet, Mongolia and Sinkiang. We have refused to interfere on behalf of China or protest against the attitude of Great Britain and Russia. We can not fairly now force ourselves into the dispute over Manchuria. The issue is one between China, Japan and Russia, one that we will do well to keep out of.

The Problem of Manchuria

What Should be the Attitude of the United States?

A Regional Alliance Between China and Japan or an Oriental Platt Amendment Covering Manchuria Suggested as a Practical Solution

By George Bronson Rea

THE Chinese contend that the 1915 treaty is invalid because it was extracted under duress. Now, it is a poor rule that fails to work both ways. In 1895, China and Japan went to war over Korea. Under the terms of the peace treaty drawn up at Shimonoseki, China ceded to Japan the Liaotung Peninsula but, before the treaty was signed, Russia, supported by France and Germany, advised Japan to return this territory to China. Japan could not fight the three strongest military Powers of the world; so was constrained to do as she was advised. Now, as far as China was concerned, she deeded the Liaotung Peninsula to Japan. It belonged to Japan by right of conquest but Japan was compelled to hand it back to China under the terms of an ultimatum or, UNDER DURESS.

China forgets this incident and refuses to go behind the 1915 treaty in discussing Japan's rights in Manchuria. At the Washington Conference, when this question was threshed out China reserved to herself the right to reopen the question on all future appropriate occasions. In 1923, on the expiration of the original lease, she notified Japan to get out and, early this year, protested against an American loan to the South Manchuria Railway on the grounds that Japan's rights were invalid.

Japan stands firmly on the sanctity and validity of the 1915 treaty. She declares that, if China's contention be admitted, it would create a most dangerous precedent. Japan is in possession. She refuses to discuss the question with China or permit any third Power or international tribunal to intervene in the dispute. A very definite and acute issue therefore exists.

Now, if China's contention is accepted, Japan's rights in Manchuria must be defined by the terms of the Portsmouth Peace Treaty. The lease to the Liaotung Peninsula lapsed in 1923 and the railway rights expire in 1933. If Japan is forced back to Portsmouth to define her position in Manchuria, surely, in view of China's confession at Washington, Japan has the right to demand a reopening of the Portsmouth negotiations based on that confession. In common law she would have that right and, as there is no statute of limitations to shield a nation from the consequences of its acts, it would seem that Japan has a very strong case upon which to rest her demand for adequate reparation from China for her part in the alliance which made the Russo-Japanese war possible.

Is an amicable solution to the problem possible? Dr. Wu, the distinguished representative of China, has intimated that an agreement can be arrived at along economic lines. He says that China is willing to recognize Japan's economic rights under a guarantee that they will be protected by China. In effect, he says to Japan; "if you will withdraw your railway guards from Manchuria, the Chinese army will protect Japanese lives and properties and defend your interests against outside aggression." Fair enough, if China is in a position to carry out her guarantee. Undoubtedly, Japan would consider such a proposition if the issue involved concerned only China and herself.

Unfortunately, the issue is a three cornered one. Dr. Wu overlooks the important strategic angle arising from Russia's position in North Manchuria and her virtual protectorate over Outer Mongolia. Before the Japanese can even consider the Chinese viewpoint, the status of Outer Mongolia should be definitely determined, for as long as this vast region remains under Soviet domination, it constitutes a standing menace not only to China but to Japan and, until such time as China is strong enough to defend her territory against aggression, Japan will not surrender her right to protect her vital economic and strategical position in South Manchuria. As Mr. Matsuoka, the vice-president of the South Manchurian Railway recently put it; "The Chinese may call this a 'protectorate,' you can call it anything you like. . . . it will not change Japan's determination to protect the lives and properties of her nationals and preserve the peace of Manchuria. . . . Manchuria is our first line of defense." This is a clear cut pronouncement of policy, summarizing in a few words, Japan's strategic interests in the territory. Is Japan justified in taking this stand?

Dr. Wu has compared Japan's intervention in Manchuria with our own intervention in Nicaragua. I am sure he loses the real point of American policy. The attitude of the American Government towards intervention in these Caribbean countries has been so clearly and forcibly brought out in the discussions before this Institute that it is superfluous for me to go over the subject except to state that protection to American lives and properties abroad is now recognized by both major political parties as a fundamental obligation of government. President Coolidge summarized this obligation in his Gettysburg speech when he said. "*A government that failed in its duty to protect the lives and property of its citizens would be justly condemned at home and covered with derision abroad.*" Senator Fess emphasized it in his keynote speech at Kansas City. The Republican party reaffirmed the principle in its platform. Mr. Hughes at Princeton also gave an illuminating address on our right to intervene. Ogden Mills, in a recent issue of Foreign Affairs concludes a defense of the administration with the following words: "*The right and duty of intervention are so well established under international law that for the United States to avoid its responsibilities would be a derogation of its sovereignty.*"

We cannot apply a principle for the defense of our own national security and deny to another great Power the right to invoke the same principle when its own national existence is placed in jeopardy. If we are justified in enforcing a doctrine devised to secure our nation against possible aggression, then Japan is equally justified in enforcing a similar doctrine where her own vital interests are concerned. We Americans go even further and harp on our moral obligation to intervene in the name of humanity, pointing proudly to the material advantages that our intervention has brought to the people of these Caribbean countries. We declare that the peace, prosperity and security that has followed our intervention has brought far greater benefits to the people than any temporary

impairment of their sovereignty. I have never heard any American admit that Japan might have a moral obligation to do the same thing in Manchuria, yet the peace, prosperity, security and happiness that the presence of the Japanese troops have conferred upon the people of this region, have been of far greater importance to world peace and the advance of civilization and on a far greater scale, than any similar intervention on our part in the Caribbean.

The position of Japan in Manchuria is identical to that of the United States in Cuba without the Platt Amendment. Our self-assumed right to intervene in the affairs of the other Caribbean countries rests firmly upon our determination to resort to extreme measures to defend the approaches to the Panama Canal and our future canal route through Nicaragua. It may outrage, as it does, the sensibilities of our Latin American neighbors, but we invoke the law of self-preservation and place our own security first.

American rights in Panama and Nicaragua are similar in principle to Japan's in Manchuria. The United States controls a narrow strip of territory cutting right through the heart of two independent Latin American republics whose sovereignty we respect in all other matters and will fight to maintain against any and all outside aggression or intervention. The only difference is that, whereas the strategic menace confronting the United States in the Caribbean is distant and somewhat problematical, the menace confronting Japan in Manchuria is immediate and ever present. Constant vigilance in Manchuria and along the Mongolian border lands to resist the first signs of aggression from the North is the price of Japan's continued security and independence. As the United States will fight at the drop of the hat to defend her strategic position in the Caribbean, so will Japan, with greater justification, fight to maintain her position in Manchuria, not because she harbors any ulterior designs upon China's sovereignty or territorial integrity, but to preserve those vital, economic and strategic advantages upon which her continued existence as a nation must depend until such time as China herself can guarantee that Russia will never again menace her independence by violating the neutrality of China.

Does the American Government recognize the validity of the 1915 treaties?

Secretary Bryan in his note of March 13, 1915, to Baron Chinda, the Japanese Ambassador at Washington, raised no question as to the legitimacy of the Twenty One Demands concerning Shantung, Eastern Mongolia or Manchuria. He frankly recognized in this note that territorial contiguity creates special relations between Japan and these districts, protesting only against those Demands which infringed the principle of equal trade opportunity by granting to Japan a monopoly of furnishing arms and munitions to China and of developing the province of Fukien, etc. The American note of May 15 informing the Governments of China and Japan that we could not recognize any agreement that had been entered into impairing the treaty rights of the United States or its citizens in China, the territorial integrity of the Chinese Republic or the Open Door doctrine, must be interpreted in the light of the Department's subsequent rulings on the 1915 treaties. When an American company in October 1915 secured the contract for the improvement of the Grand Canal and Japan demanded participation in the enterprise by reason of having taken over the German rights in Shantung, Minister Reinsch suggested to the Japanese Minister at Peking that co-operation should be reciprocal and extended to American participation in Japanese railways in Manchuria. The Japanese Minister promptly informed his Government of Reinsch's suggestion and Tokyo instructed its Ambassador at Washington to approach the State Department and ascertain if Reinsch's attitude was in obedience to its instructions.

Under date of January 27, 1917, Secretary Lansing telegraphed Minister Reinsch as follows:

"The Japanese Ambassador asked if Minister Reinsch's suggestion of co-operation in Manchurian railways was in obedience to the Department's instructions and was told it was not; that the Department would be glad to see such co-operation. It recognized that Japan had special interests in Manchuria but held that Shantung was different." etc.

On March 6, 1917, Minister Reinsch telegraphed to the Secretary of State, as follows:

"I have the honor to request more specific information in connection with your telegram of January 27, more particularly with respect to the statement: 'The Department recognizes that Japan has special interests in Manchuria.' The Legation

has hitherto adhered to the position that while Japan has many specific concessions in South Manchuria, her position in that region is to be understood to be made up on the sum of such specific concessions. In other words, that privileges could be claimed, not by virtue of a so-called 'special position' but only under some specific grant."

Secretary Lansing responded to this request in a telegram to Minister Reinsch dated April 16, 1918 (evidently a typographical error and meant to be 1917.)

"In my conversation with the Japanese Ambassador, I had in mind nothing more than to point out the differences between conditions in Shantung and those in Manchuria and in using the phrase 'special interests,' I had reference to such specific concessions as the Lease of the Kwantung Peninsula and the leases of the South Manchuria Railway and other railways with the right to maintain railway guards.....

"The assumption of the Legation therefore is correct, that the special interests of Japan in the view of the Department, are to be understood as confined to those specific rights and privileges which were obtained by the Japanese Government from China and from Russia by way of international agreement."

This telegram, dated two years after the 1915 Treaties had been signed, would indicate that the American Government recognized their legality and, if further proof is needed, it is only necessary to point to the fact that the American consul at Dairen is under the jurisdiction of our Embassy in Tokyo.

When, early this year, both the Nationalist and Peking Governments protested against an American loan to the South Manchurian Railway on the grounds that the 1915 treaty was invalid, it brought the issue squarely before our Government. We could not take sides by approving or objecting to the loan without becoming involved in the dispute. The subsequent statement of Secretary Kellogg that Manchuria is an integral part of China, indicates that although we recognize China's sovereignty over the territory, we also recognize the legality of Japan's specific rights and privileges obtained from China under mutual agreements.

From this hurried analysis of the situation, it would seem that as far as Japan is concerned, any solution must be based on a recognition of her vital strategic requirements, in the same way and for the same reasons that Great Britain has qualified her recognition of Egypt's independence and our own limitation on the sovereignty of Cuba.

As long as Mongolia is included in the federation of Soviet republics and Soviet influence dominates Northern Manchuria, Japan cannot safely entrust the protection of her vast and vital interests in South Manchuria to the Chinese. Until China is strong enough to defend these interests, it would seem that Japan has not only a legal but a moral right to take any action she deems necessary to guarantee her own and China's security. Japan will never surrender this right to defend her national existence, so a solution within the realms of practical politics would seem to lie in a regional alliance between China and Japan for the defense of their mutual interests, at least until such time as China is strong enough to guarantee this territory against aggression. If China is unwilling to enter into such a compact and insists upon a complete evacuation of Japanese troops from her territory, the only other solution would be some understanding that would concede to Japan rights similar to those imposed by the United States upon Cuba under the Platt Amendment and by Great Britain upon Egypt.

In her present frame of mind, China will never consent to any further impairment of her sovereignty. Japan will never surrender her rights as a great Power to invoke the law of self-preservation. If a show-down is precipitated, the United States will become a battleground for the propagandists of both sides. We will be told that we are in honor obligated to uphold and defend the doctrine of the Open Door and the integrity of China. But let us not forget the answer John Hay made when China appealed to him to intervene at the time of the Russo-Japanese war. We did not at that time fully understand the problems involved and although we now have a clearer insight into those matters, there are many phases and angles that are still hidden from us. We may sympathize with China, as I am sure we all do, but we must also be just to Japan.

If the United States remain neutral, China and Japan will find some way to solve this dispute in a practical and amicable manner advantageous to both sides. The policy of our Government and the attitude of our people should be one of—Hands off!

Baron Tanaka on China

By George E. Sokolsky

BARON Tanaka, tall, erect, of military bearing, whose parchment-like face creased and wrinkled as he smiled, greeted me most cordially in the Ministry of Foreign Affairs in Tokyo. It was one day before the end of my visit to the Japanese capital and it was the culmination of a week of hospitality and interviews, during which I was given an opportunity to see the principal men of Japan, politicians, bankers, industrialists and labor leaders, with whom I discussed China.

Baron Tanaka was left for the last and our conversation was frank throughout. I opened the political part of the interview as follows:

"The Chinese people, Baron Tanaka, think that Japan's policy with regard to China is solely that of the Seiyukai and does not represent the true opinion of the Japanese people. Upon my arrival in your country, even I believed that that was a correct view. It is because of this opinion so generally held in China and because so much of China's attitude towards Japan is based upon this idea that I came here to learn and I should be very happy if you could express your ideas for publication in the FAR EASTERN REVIEW.

Baron Tanaka replied:

"Most emphatically, the whole of Japanese public opinion supports my policy. There is no difference in essentials between the Seiyukai and the Minseitō (Opposition Party). I know that not only is this policy supported by the political and diplomatic leaders of Japan, but also by the business men. And you would be surprised to know that there has not been as much criticism of this policy from the foreign Powers as has been generally believed."

Baron Tanaka then said that he had had a very long experience in China as a military man and knew the Chinese situation very well.

"At no time in the past has the public opinion of Japan been so united. Although I know that there has been criticism of our China policy and that it has been described as aggressive and as involving an infringement of China's sovereignty, I can tell you that the Japanese have no such designs. Japan's policy is definitely based upon the principle of vital national self-defence of the Japanese Empire. We have no aggressive designs."

"Baron Tanaka," I said, "according to Chinese opinion there have been no recent developments in the relations between China and Japan which in any way imperil the national defence of the Japanese Empire."

Baron Tanaka for the moment avoided that question, only to return to it later. Instead he said: "There is no need to discuss how much the Japanese have suffered from the successive revolutions and from the chaotic conditions in China. We hope that China may be free from all chaos and that China may emerge from her troubles to a place at which it will be possible for her leaders to enter upon a constructive program for the stabilization and reconstruction of the country. We Japanese earnestly wish for that.

"We Japanese went through a similar experience 70 years ago and as we understand all the difficulties the Chinese face, we have a deep sympathy for them at the present time.

"I have confidence that the new Nationalist Government, which General Chiang Kai-shek and his colleagues are seeking to establish, will give China a more stable and responsible Government."

Baron Tanaka then commented on the character of the new Five-Council Government as being a step forward in political organization in China. He thought that the new administration would lead to a greater assumption of fixed responsibility.

"I am glad," he said, "that this step is being taken, not only from the standpoint of Chinese and Japanese interests, but also from the standpoint of humanity and Sino-Japanese economic relations. My reports with regard to the new reorganization lead me to hope and expect that as a result of this most optimistic development, China will enter upon a constructive era. I eagerly await the announcement of the new Government.

"I deeply sympathize with the Chinese in their efforts with regard to reconstruction and am fully willing to co-operate with them in this effort. After all, the Chinese people are our neighbors and we have had intimate relations and friendship for the Chinese people. However, we cannot disregard some actions of the Chinese Government which are altogether in disregard of international fidelity. I mention as two examples, the unilateral abrogation of treaties and the putting into effect of provisional regulations without the consent of the Powers concerned. Such actions tend to make it impossible for the Japanese to deal with the Chinese amicably and to co-operate with the Chinese in the reconstruction of their country."

Baron Tanaka then reverted to a question which I previously asked. He said: "A few minutes ago you made the remark that the recent developments in China did not endanger the national existence of Japan. But you must note the Chinese attitude toward us and until this attitude on the part of the Chinese changes, the Japanese find themselves in the position where they are unable to give full co-operation. If, as I expect, the new Nationalist Government, which is being established in Nanking with a fixed responsibility and a definite administrative organ, makes its position stronger in the country and changes from its former attitude toward Japan to one that is more conciliatory and more friendly, it will

be possible to create conditions under which co-operation on a reciprocal basis can be achieved and nothing will give me more happiness and pleasure than this. If the changes which I have indicated are realized, then we shall be prepared to deal with the Nationalists in solving amicably the pending questions between China and Japan."

"Baron Tanaka," I said, "I think that many of the important Chinese people believe that your Government is quite unstable; its downfall has been expected to take place at any moment and I assume that the Chinese attitude, to which you call attention, is based upon such a belief. You have, of course, noted that there have been Chinese who have favored the Oppositional Party in Japan."



Baron Tanaka, Premier of Japan

Baron Tanka replied: "You have spoken frankly and I will reply to you with equal frankness. I have known all the time that the Chinese have believed that my Government would fail and I gave special attention to the question of the political situation in Japan. We know that Japanese internal politics are quickly mirrored in China and exercise direct and indirect influence over Chinese policy. I have now been completely successful in accomplishing the unification of Japanese public opinion, particularly with regard to the Sino-Japanese Commercial Treaty which the Nationalist Government has unilaterally abrogated."

I then asked Baron Tanaka about Japanese public opinion concerning Manchuria. "I repeat as regards the Manchurian question, there is no difference of opinion among the political parties in Japan."

"What about the question of the *interim* rate tariff revision, Baron Tanaka?" I asked.

With regard to this question, I was told that the Nationalist Government had presented the problem to the Japanese, but that thus far there had been no action. I then asked Baron Tanaka about the Japanese attitude toward the Tsinan Incident.

He replied, "I do not consider this a very difficult question to solve. If China can give us security for the future, that question would be easily solved. As to my personal attitude, I do not desire that a single Japanese soldier should remain in that region."

In connection with the above interview, it must be remembered that Baron Tanaka was speaking as the Japanese Minister of Foreign Affairs and not only as the President of the Seiyukai Party.

Boycotts and Politics

THE Chinese assume that they can make war on a foreign Power by the use of the economic weapon, the boycott. The first organized boycott against a foreign Power was undoubtedly the anti-American boycott in 1905, which was a protest against the Exclusion Act. There have been subsequent boycotts, the best organized and most effective being the anti-Japanese boycott in 1919 which was a protest against the Shantung clauses in the Versailles Treaty and the anti-British boycott of 1925, which was organized by the Communist Party of China and supported by the Nationalist Government, then in control of Canton. There have been numerous smaller and less effective boycotts; there have been local boycotts involving only a city or a province. Most Chinese believe that the boycott against Japan which commenced after May 3 of this year as a result of the Tsinan affair is effective. The following article by Mr. George E. Sokolsky, describes the boycott situation as he found it in Japan during a visit there at the beginning of this month:—

The use of a weapon in warfare is largely dependent upon its effectiveness. The lance is no longer regarded as an effective weapon because it cannot produce deadly results and the lancers are wiped out by machine-gun fire. The same is true, of course, to an even greater degree of the bow and arrow. The use of the economic boycott, the severance of economic relations in peace time, is to be determined entirely upon its effectiveness, which means its ability to bring the boycotted nation to terms. China has, at times, used this weapon with undoubted favorable results. The utility of the weapon in the present boycott against Japan can only be measured statistically.

Now, most Chinese statisticians study this question solely by Chinese statistics. That is, they get the reports of the Chinese Maritime Customs, find Japan's trade with China, see that it is huge and determine that the China trade amounts to approximately 60 per cent. of Japan's total foreign trade. A study of the Japanese statistics, however, presents a very different picture. Now, the total foreign trade of Japan during 1926 (the last figures available) amounted to Y.4,422,212,384. Of this trade Y.1,541,066,340 was with the United States, while Y.972,310,471 was with China, including the Kuantung Leased Territory. The total trade between Japan and the Kuantung Leased Territory amounted to Y.166,639,777, which can be deducted from the total given above, as this trade cannot be affected by any boycott in China.

To analyze these figures somewhat in detail. The exports of Japan for 1926, show a total of Y.2,044,727,891. Of this amount, the United States took Y.860,880,579 of Japanese goods; China took Y.421,861,236; Kuantung Leased Territory, Y. 99,606,771; Hongkong, Y.52,973,011.

When we analyze the imports into Japan, we find similar results. The total imports during 1926, amounted to Y.2,377,484,493. The United States appears as sending goods amounting to Y.680,185,761; China Y.239,410,462; Kuantung Leased Territory, 57,033,708; and Hongkong, Y.1,426,286.

Mr. Y. Yasukawa of the Mitsui Bussan Kaisha shows, in an address, the percentage of Japan's exports to China in accordance with Japan's total foreign trade from 1923 to 1927 as follows:—

1923	...	...	...	...	19 per cent.
1924	...	...	...	...	20 "
1925	...	...	...	...	21 "
1926	...	...	...	...	22 "
1927	...	...	...	...	19 "

In the same address, he gives the following percentages for the imports into Japan from China:—

1923	...	...	...	...	13 per cent.
1924	...	...	...	...	12 "
1925	...	...	...	...	11 "
1926	...	...	...	...	13 "
1927	...	...	...	...	14 "

In analyzing these figures, Mr. Yasukawa points to the fact that 83 per cent. of Japan's exports to China is cotton cloth; eight per cent. refined sugar; five per cent. coal; four per cent. sea products; and three per cent. paper. Now, with the exception of cotton cloth, most of these products are at present only purchaseable in other places at a considerable loss to the Chinese, as they have themselves indicated by excluding such items as coal and paper from active boycott operations. China's industries have been progressing to such an extent that Japan's exports of commodities like cotton yarn, soap, matches, singlets and ironware have normally decreased as the Chinese manufacture of these commodities has increased, and the Japanese have been forced to seek markets for their production of these commodities elsewhere, particularly in Africa and the South Seas countries.

For instance, the total export of cotton yarn from Japan to China in 1919 amounted to Hk. Tls. 85,000,000, in 1922 to Hk. Tls. 62,000,000, while in 1927, it was only Hk. Tls. 10,000,000. This decrease is due to the expanding capacity of the cotton mills, which are gradually reaching a point where they will be able to supply the available market here. Japan, then, must seek a market for her surplus elsewhere irrespective of boycotts. On the other hand, there is not a single item which Japan imports from China, with the possible exception of soya beans, which Japan cannot obtain elsewhere. In many instances, Japan is already obtaining these items in other countries, as for example, rape-seed from India instead of Wuhu.

Taking the problem statistically then, the boycott cannot affect a very large part of Japan's foreign trade. At most, it can affect 19 per cent, but to accomplish that, the boycott would have to be effective 100 per cent. throughout China, including Manchuria, which is a palpable absurdity. At most, to-day, it affects five or six per cent. of the trade of the city of Osaka.

Now, in Osaka, I found that the large Japanese business men cared nothing about the boycott. They said that they were quite prepared to face the present boycott, as all the Osaka factories

were working full time. The only factories which were hit were stockings, singlets and small dry goods. The Japanese banks were carrying these companies and were prepared to carry them as long as the boycott lasted. They insisted that the large cotton mills were wholly unaffected, because they were hit only to a small extent.

There was also a contrary view. A very important business man told me that although Osaka was not hit by the present boycott, China was a very good market, near to Japan and normally favorable to Japanese goods. This market had been adequately developed by the Japanese. He felt that the Japanese business men should try to do everything possible to hold this market, in preference to seeking new markets the world over, which he regarded as an expensive operation. But, of course, if the Chinese made it impossible to make profits out of the China trade, business would naturally gravitate to wherever profits could be made.

I was told everywhere the same story. The 1919 boycott forced Japan to make provisions for other markets so that the Japanese would not again suffer from a political boycott. During the intervening years, Japan developed these new markets, which became particularly useful during this year of trouble. The results are indicated by the lack of unemployment in Osaka arising from boycott conditions in China.

Certain facts may be brought out to supplement the above. According to the Chinese Maritime Customs the direct imports from China to Japan were 29.43 per cent. or Hk. Tls. 336,909,441; while the direct exports from China to Japan amounted to 24.50 per cent. or Hk. Tls. 211,740,740,889 in 1926. Japanese trade predominated, exceeding, from the standpoint of statistics, British trade for the same year.

There is no question but that from the standpoint of the individual Japanese firm doing business in China, the boycott is to a certain extent serious. Some of these firms are established entirely for China trade. Some of them are established principally for China trade. At any rate, this trade involves a huge investment for the individual concern, but the political value of the boycott cannot be based upon the problems of the individual trader nor upon his difficulties in making a profit for the year. The question has to be viewed statistically in its relationship, first, with the total foreign trade of the country and, secondly, with the total wealth of the country. It is true that in Shanghai and in other places the Japanese godowns are full of unsold goods, but the question arises whether the economic loss in this connection is with the Japanese seller or with the Chinese purchaser. For instance, order for goods involving payment upon the placing of the order, entirely involves the Chinese dealer who places the order and if he cannot remove the goods from Japanese godowns, he is faced with an additional warehouse charge and insurance costs. In cases where the Japanese are importing goods to carry stocks in China, they naturally face such losses, but these considerations are minor when the fact must be faced that should the loss to Japan be complete it would only involve 5 per cent. or 6 per cent. of the total Japanese trade and as the political issues which have brought this boycott about are of vast importance to Japan, the 5 per cent. or 6 per cent. of the total foreign trade can be sacrificed in the hope of a large profit in a better period.

The other side of the picture is not so pleasant. Japanese imports and exports give to China about one-third (somewhat less) of her total customs revenue. The customs, salt and tobacco revenues are at the present time the mainstays of government finance. So far as security for foreign and domestic loans are concerned, the customs and tobacco revenues are at present the only ones which appeal to lenders. In Japan, the suggestion was made, perhaps not very seriously, that if China continues the boycott, Japan might boycott exports from China. This, of course, is not presented as a genuine possibility, but to carry the boycott question to its logical conclusion, suppose the trade between China and Japan should cease, China would be faced with a loss of one-third of her customs revenue. Carrying the question a step further, suppose China should refuse to purchase goods from Japanese-owned industries in China, then about 100,000 Chinese laborers will be thrown out of work.

There are those who have not statistical minds and whose analysis of political problems arises entirely from a sand storm of

slogans and propagandistic verbiage. This is particularly true of a small group of foreign journalists in China who outdo the Chinese in their animosity toward Japan, who had hoped in 1919 that the United States would go to war with Japan and who, having failed in this, have ever attempted to stimulate and foment anti-Japanese sentiments in China. Such pernicious creatures of fortune avail themselves of the slightest imbroglio between China and Japan to brew a storm of words and phrases and meaningless repetition of chaotic thinking until they have impressed upon themselves the importance of their own statements. These people are incapable of analyzing statistical statements nor can they bring themselves to pore over the dry-as-dust figures in Customs Reports. They insist upon believing their own *a priori* assumptions as inevitably correct, just as mediaeval navigators assumed that the earth was flat. Chinese business-men and bankers, men of affairs, not the politicians who thrive upon disorder, but the constructive minds who are seeking to develop their country, know that every boycott movement in China brings disaster to the Chinese and results in a huge loss of the national wealth. Unfortunately, China is a non-statistical country and it is impossible to obtain, except in the Customs Returns and in the reports of the Bureau of Economic Information, accurate data on economic subjects. For instance, there is no report on the national wealth of China, on banks' deposits or on investments in trade and goods, but the experience of bankers has been that these boycotts result in losses to their Chinese depositors.

There will undoubtedly be many issues between China and Japan because, although China has not developed, as Japan had hoped that it might, into Japan's principal market, from a political and strategical standpoint, China is of infinite importance to Japan and as this importance grows there will be numerous issues under dispute. The economic boycott as a weapon will not bring about a settlement of these issues and only political charlatans would utilize such a weapon at a time when what is necessary is a fundamental readjustment of the relations of two countries. That fundamental readjustment will come because the big men in both countries have it as their objective that there shall be no wars between China and Japan.

There are only two forces that are making for disturbances in the relationship of China and Japan: one force is Soviet Russia which has its own imperialistic program in China and that program conflicts with the Japanese program and definitely endangers Japan's national existence. The other element is that willful group of adventurous Japanese-baiting journalists who, having been taught to make stories even where they do not exist to keep the news alive, continue to keep stirred up the ingredients of unfriendliness between China and Japan and who pander to those unscrupulous opportunists in China who think not so much about the welfare of their country as they do about remaining in office by means of some anti-foreign issue.

Book Review

A Hand Book of Culvert Practice

PUBLISHED BY THE CALIFORNIA CORRUGATED CULVERT Co., West Berkeley, California. Brings together in one place, for ready reference of the busy engineer, data for use in the design and specification of small culverts, particularly the corrugated type.

The material is based on best practice, and includes the result of some important experiments conducted during the past decade, which give, for the first time, accurate information on some of the more perplexing problems of culvert practice.

In the production of this book the California Corrugated Culvert Co., has drawn largely from the work of leading highway engineers and officials, editors of technical journals and professors of Highway Engineering.

The book is interesting, readable, and of value to those who are associated with the work covered by it.

The New Government of China

By George E. Sokolsky

ON October 10, the anniversary of the founding of the Republic of China, a new government was announced in Nanking—new, both in constitution and in personnel. This new government marks a departure from the Soviet Commission form of government, which has heretofore obtained in the territory under the control of the Nationalist Government. The new Nationalist Government is a closer approach to the constitutional system obtaining in Western Europe and America. It is a step forward in the direction of a Democratic Government.

In 1911, when China became a Republic, a constitution was written, modelled upon similar documents in France and the United States. This constitution made China a republic and was regarded by democrats throughout the world as a tremendous revelation of the capacity of young China. The constitution, however, never became really effective because it was unsuited to China and lacked continuity with the political traditions of the country. As a result of this failure, Yuan Shih-kai was able to turn himself into somewhat of a dictator which forced the progressive elements of the country to follow the leadership of Dr. Sun Yat-sen in constant revolution against his power. One of the immediate results of this condition was the development of military feudalism, which has kept China in turmoil from 1912 until the present day. Tuchuns marched with their armies across the country ravaging provinces and bringing upon the people untold misery. The energy of the nation was diverted to the destruction of its wealth and golden years were lost which might have been utilized in works of reconstruction and development. Dr. Sun Yat-sen throughout his career saw the futility of this condition and he proposed a five power form of government which would be democratic in conception and yet would adhere closely to the political characteristics of the Chinese people. In addition to an executive, legislative and judicial branch of the government, he provided for a Board of Examinations and a Board of Censorship which would be of equal authority and equal right as the other three of the more usual branches.

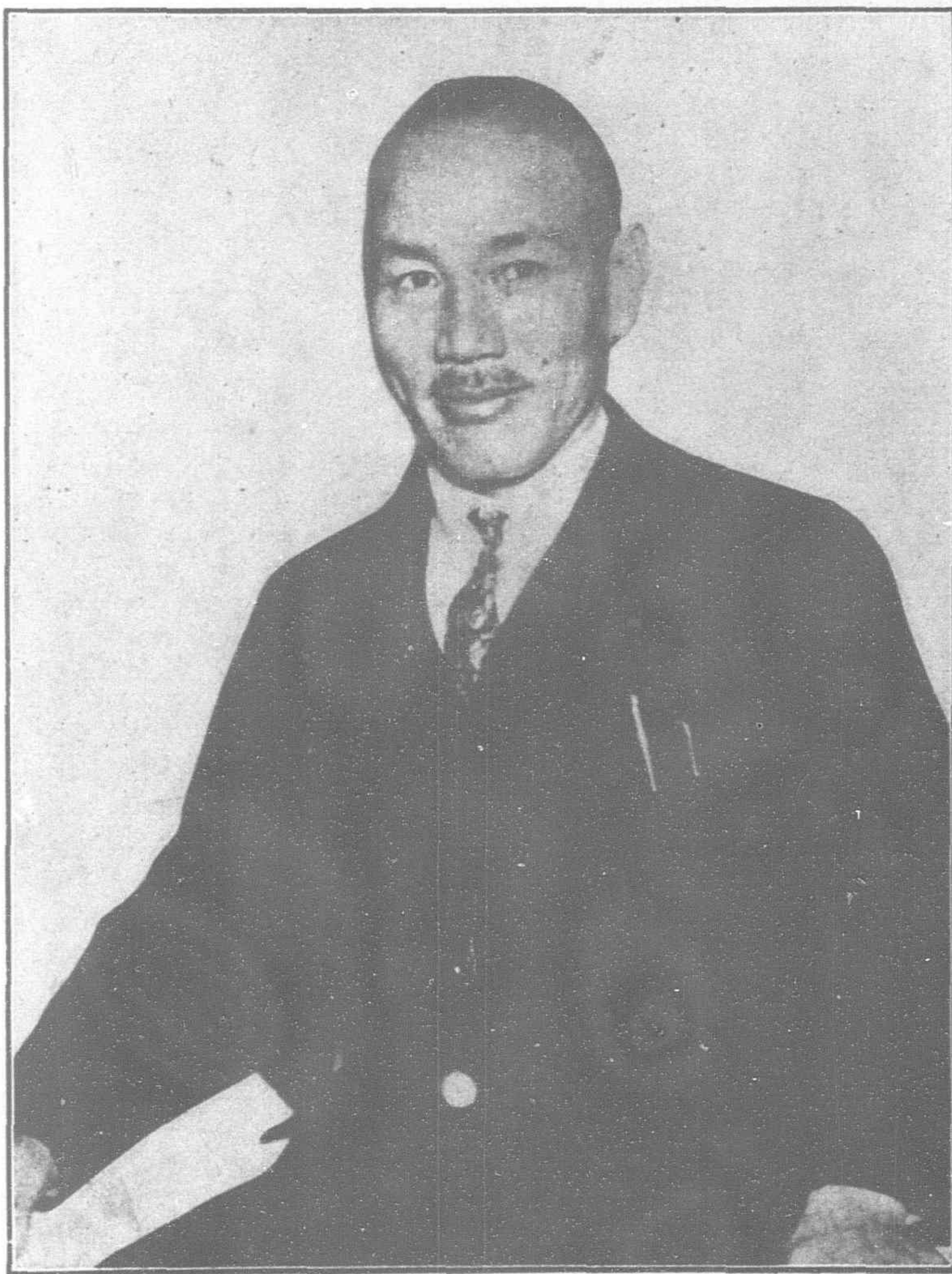
In 1923, Dr. Sun Yat-sen found it necessary to form an alliance with Soviet Russia. He realized that he could not achieve the destruction of feudalism by military force without outside assistance and only Soviet Russia was prepared to help him in the manner that was necessary for his purpose. They supplied him with military advisors; they organized an army for him; they helped him to obtain arms and munitions and they taught him how to use mass propaganda in such a manner that the victory was inevitable. Their price appeared to be a very small one, namely, that the Kuomintang would form an alliance with the Third International and that members of the Communist Party of China would be admitted to membership in the Kuomintang.

It was subsequently found that this price was a very great one for China to pay and it involved the Nationalists in strife with great foreign Powers and that it imposed upon the Nationalist Government a political system which was confusing and bewildering and which could only be operated by the Russians themselves. The Soviet system of government is designed to prevent any individual from gaining so much power in the Government that he achieves what might be regarded as dictatorial authority. Commissions and committees are organized for the purpose of so dissipating the power of government that the center of authority, instead of being with those who are actually responsible for the conduct of government, is with a remote and irresponsible committee. As long as Michael

Borodin was in Canton and Hankow in control of the Government, this system was effective because he knew how to operate it and he was able to dominate the situation almost to a point of dictatorship, but when he was asked to leave China and the Chinese themselves attempted to manage this complex and purely Russian form of government, they produced a system in which those who had authority had no responsibility and those who bore responsibility had no authority. The result was confusion and petty intrigue and chaos worse than that which had existed under feudalism. Successive attempts were made to break away from this confusing system, but they had hitherto failed largely because the country was not unified, fighting was still taking place in various parts and there was constant jealousy among the leaders. There can be no question but that the return of Mr. Hu Han-ming to China played a very large part in achieving the organization of a new form of government.

Mr. Hu Han-ming and his supporters in the Kuomintang left China last December largely because they were unable to work together in the Government with General Chiang Kai-shek. It would be futile and harmful to revive at this time the misunderstandings which had taken place between these people. Mr. Hu

Han-ming, Mr. Sun Fo, Dr. Wang Chung-hui and other members of their group, travelled through Europe and America studying systems of government and the political achievements of other peoples. One fact that was borne upon them was that no matter what personal disagreements there may have been, China would never achieve unity and power unless there was a determination on the part of all the leaders to work together at any cost. Those who previous to Mr. Hu Han-ming's arrival believed that his presence in China would lead to further fighting, that he would support one faction against another, were, then, surprised when he and his associates definitely determined to support General Chiang Kai-shek and whoever could manage the Government in Nanking, irrespective of any differences of opinion as regards details. The result of numerous conferences and meetings was the promulgation of an organic law of the Nationalist Government of the Republic of China, which is here given in the translation provided by the *Kuo Min News Agency*:—



General Chiang Kai-shek, Chairman of the Government Council

The Kuomintang of China, in order to establish the Republic of China on the basis of the Three Principles of the people and the Constitution of Five Powers, which form the underlying principle of the Revolution, having conquered all opposition by military force and having now brought the Revolution from the military stage to the educative stage, deem it necessary to construct a framework for the Constitution of Five Powers with a view to developing the ability of the people to exercise political power, so that constitutional government may soon come into existence and political power be restored to the people; and, further, in virtue of the responsibilities hitherto entrusted to the Party for the guidance and supervision of the Government, do hereby ordain and promulgate the following Organic Law of the National Government:

CHAPTER I.

THE NATIONAL GOVERNMENT.

Article 1. The National Government shall exercise all the governing powers of the Republic of China.

Article 2. The National Government shall have the supreme command of the land, naval, and air forces.

Article 3. The National Government shall have the power to declare war, to negotiate peace, and to conclude treaties.

Article 4. The National Government shall exercise the power of granting amnesties, pardons, reprieves, and restitution of civic rights.

Article 5. The National Government shall be composed of the following five *Yuan*: the Executive *Yuan*, the Legislative *Yuan*, the Judicial *Yuan*, the Examination *Yuan*, and the Control *Yuan*.

Article 6. There shall be a President and from twelve to sixteen State Councillors of the National Government.

Article 7. The Presidents and Vice-Presidents of the Five *Yuan* shall be appointed from among the State Councillors of the National Government.

Article 8. The President of the National Government shall represent the National Government in receiving foreign diplomatic representatives and in officiating or participating in State functions.

Article 9. The President of the National Government shall concurrently be the Commander-in-Chief of the land, naval, and air forces of the Republic of China.

Article 10. In case the President of the National Government is unable to discharge his duties from any cause whatsoever, the President of the Executive *Yuan* shall act in his place.

Article 11. The National Government shall conduct



Mr. Wang Chung-hui, Chairman of the Judicial Council

national affairs through the State Council. The State Council shall be composed of the State Councillors of the National Government, and the President of the National Government shall be the Chairman of the State Council.

Article 12. All matters which cannot be settled between two or more of the *Yuan* shall be referred to the State Council for decision.

Article 13. All laws promulgated and all mandates issued by virtue of a decision of the State Council shall be signed by the President of the National Government and countersigned by the Presidents of the Five *Yuan*.

Article 14. Each of the Five *Yuan* may, according to law, issue orders.

CHAPTER II.

THE EXECUTIVE YUAN.

Article 15. The Executive *Yuan* shall be the highest executive organ of the National Government.

Article 16. The Executive *Yuan* shall have a President and a Vice-President.

In case the President is unable to discharge his duties from any cause whatsoever, the Vice-President shall act in his place.

Article 17. The Executive *Yuan* shall establish Ministries to which shall

be entrusted the various executive duties.

The Executive *Yuan* may appoint Commissions to take charge of specified executive matters.

Article 18. The Ministries of the Executive *Yuan* shall each have a Minister, a Political Vice-Minister, and an Administrative Vice-Minister, and the various Commissions shall each have a Chairman and a Vice-Chairman, all of whom shall be appointed or removed by the National Government at the instance of the President of the said *Yuan*.

Article 19. The Ministers, and the Chairmen of the various Commissions, of the Executive *Yuan* may, when necessary, attend the meetings of the State Council and of the Legislative *Yuan*.

Article 20. The Executive *Yuan* may introduce in the Legislative *Yuan* bills on matters within its own competence.

Article 21. Meetings of the Executive *Yuan* shall be attended by the President, the Vice-President, the Ministers of the various Ministries, and the Chairmen of the various Commissions, and presided over by the President of the said *Yuan*.

Article 22. The following matters shall be decided at a meeting of the Executive *Yuan*:

(1) Bills on legislative matters to be introduced in the Legislative *Yuan*.

(2) Budgets to be submitted to the Legislative *Yuan*.



Mr. Hu Han-ming, Chairman of the Legislative Council



General Tan Yen-kai, Chairman of the Administration Council

- (3) Amnesties to be submitted to the Legislative Yuan.
- (4) Declaration of War, Negotiation for peace, conclusion of treaties, and other important international matters to be submitted to the Legislative Yuan.
- (5) The appointment or dismissal of administrative officials of or above the rank of Chien-Jen (Third Class).
- (6) All matters which cannot be settled between the various Ministries and Commissions of the Executive Yuan.
- (7) All matters which, according to law or in the opinion of the President of the Yuan, should be decided at a meeting of the said Yuan.

Article 23. The various Ministries and Commissions of the Executive Yuan may, according to law, issue orders.

Article 24. The organization of the Executive Yuan and of the various Ministries and Commissions shall be determined by law.

CHAPTER III.

THE LEGISLATIVE YUAN.

Article 25. The Legislative Yuan shall be the highest Legislative organ of the National Government.

The Legislative Yuan shall have the power to decide upon the following:—
Legislation, budgets, amnesties, declaration of war, negotiation for peace, conclusion of treaties, and other important international affairs.

Article 26. The Legislative Yuan shall have a President and a Vice-President.

In case the President is unable to discharge his duties from any cause whatsoever, the Vice-President shall act in his place.

Article 27. The Legislative Yuan shall be composed of from forty-nine to ninety-nine members, who shall be appointed by the National Government at the instance of the President of the said Yuan.

Article 28. The term of office of the members of the Legislative Yuan shall be two years.

Article 29. The members of the Legislative Yuan shall not concurrently be non-political administrative officials of the various organs of the central or local governments.

Article 30. The President of the Legislative Yuan shall preside at all meetings of the Legislative Yuan.

Article 31. All resolutions passed by the Legislative Yuan shall be decided upon and promulgated by the State Council.

Article 32. The organization of the Legislative Yuan shall be determined by law.

CHAPTER IV.

THE JUDICIAL YUAN.

Article 33. The Judicial Yuan shall be the highest judicial organ of the National Government and shall take charge of judicial trial, judicial administration, disciplinary punishment of officials, and trial of administrative cases.

The granting of pardons and reprieves and the restitution of civic rights shall be submitted by the President of the Judicial Yuan to the National Government for approval and action.



Chancellor Tsai Yuen-pei, Chairman of the Censorship Council

petence.

Article 40. The organization of the Examination Yuan shall be determined by law.

CHAPTER VI.

THE CONTROL YUAN.

Article 41. The Control Yuan shall be the highest supervisory organ of the National Government and shall, according to law, exercise the following powers:

- (1) Impeachment.
- (2) Auditing.

Article 42. The Control Yuan shall have a President and a Vice-President.
In case the President is unable to discharge his duties from any cause whatsoever, the Vice-President shall act in his place.

Article 43. The Control Yuan shall be composed of from nineteen to twenty-nine members, who shall be appointed by the National Government at the instance of the President of the said Yuan.

The security of tenure of office of the members of the Control Yuan shall be determined by law.

Article 44. All meetings of the Control Yuan shall be attended by members of the Control Yuan and presided over by the President of the said Yuan.

Article 45. The members of the Control Yuan shall not concurrently hold any office in any of the organs of the central or local governments.

Article 46. The Control Yuan shall have the power to introduce in the Legislative Yuan bills on matters within its own competence.

Article 47. The organization of the Control Yuan shall be determined by law.



Mr. Tai Chi-tao, Chairman of the Examination Council

Article 34. The Judicial Yuan shall have a President and a Vice-President.
In case the President is unable to discharge his duties from any cause whatsoever, the Vice-President shall act in his place.

Article 35. The Judicial Yuan may introduce in the Legislative Yuan bills on matters within its own competence.

Article 36. The organization of the Judicial Yuan shall be determined by law.

CHAPTER V.

THE EXAMINATION YUAN.

Article 37. The Examination Yuan shall be the highest examination organ of the National Government and shall take charge of examinations and determine the qualifications for public service. All public functionaries shall be appointed only after having, according to law, passed an examination and their qualifications for public service having been determined by the Examination Yuan.

Article 38. The Examination Yuan shall have a President and a Vice-President.

In case the President is unable to discharge his duties from any cause whatsoever, the Vice-President shall act in his place.

Article 39. The Examination Yuan may introduce in the Legislative Yuan bills on matters within its own com-

CHAPTER VII.
ADDITIONAL ARTICLE.

Article 48. The present Law shall come into force on the day of its promulgation.

The preamble of this Organic Law still makes the Kuomintang, as a political party, the center of power, but in the organization of the Government there is fixed responsibility to the extent that General Chang Kai-shek is responsible for the entire government and in allocating authority there is definiteness as to the relationship of authority and responsibility. In the above translation the word "President" should, in fact, be "Chairman" as the Chinese characters for the term are not the same as is ordinarily used in Chinese for the word "President," but the intention is vaster than would be implied by the use of the word "Chairman" and the translator undoubtedly had this in mind when they substituted the word "President" for the term "Chairman," which is a more accurate translation.

The personnel of the new Government is as follows:—

The members of the Government Council are:—

Chiang Kai-shek, Tan Yen-kai, Hu Han-ming, Wang Chung-hui, Tai Chi-tao, Tsai Yuan-pei, Feng Yu-hsiang, Sun Fo, Chen Kuo-fu, Ho Ying-ching, Li Chung-jen, Yang Shu-chwang, Yen Hsi-shan, Li Chi-sen, Lin Sen and Chang Hsueh-liang.

Executive—Tan Yen-kai, Director; Feng Yu-hsiang, Vice-Director.

Legislative—Hu Han-ming, Director; Lin Sen, Vice-Director.

Judicial—Wang Chung-hui, Director; Chang Chi, Vice-Director.

Examination—Tai Chi-tao, Director; Sun Fo, Vice-Director.

Control—Tsai Yuan-pei, Director; Chen Kuo-fu, Vice-Director.

NOTE:—The word "Control" should be "Censorship" and it is difficult to understand why, in the translation of the Constitution, this particular change was made. The word "Examination" really means civil service

examination and the word "Executive" really means "Administrative" and does not imply a Chief Executive of the nature of the American President.

The outstanding head of the Government is General Chiang Kai-shek. He is to be assisted by General Tan Yen-kai, Mr. Hu Han-ming, Mr. Tai Chi-tao and Chancellor Tsai Yuan-pei, although it is understood that the latter declines to serve because of a determination to retire from public life. Chiang Kai-shek, then, is responsible for the conduct of this Government and it is important to note that every faction and phase of Chinese political life is represented in this group of men, except the Left Wing of the Kuomintang and the Communist Party of China. Even Marshal Chang Hsueh-liang, who controls Manchuria which has not yet acknowledged the authority of the Nanking Government, is included and should he choose to serve, he will have an equal voice with any other member of the Council.

This form of Government is by no means perfect nor can there be any guarantee that it will succeed, but it is a step in the direction of unification and responsibility and it deserves the support of all who are friendly to China. The American Government has already indicated its willingness to lend its support to the new Government by indicating to other Powers its friendliness. This took the form of a *de jure* recognition of the Nanking Government as well as a message from the President of the United States through the Secretary of State on the occasion of the national holiday. The Japanese has similarly shown its friendship by commencing discussions with Mr. T. V. Soong, Minister of Finance, with regard to the revision of the tariff.

At the moment of writing no announcement has been made of the responsible ministers of the Government, but it is known that Mr. T. V. Soong will be Minister of Finance, Mr. Sun Fo, Minister of Railways, Mr. Wu Peh-chun, Minister of Communications and it is understood that Dr. C. T. Wang will continue to function as Minister of Foreign Affairs.

Sino-Japanese Relations

An Address Before the Pan-Pacific Club, Tokyo

AT an interesting tiffin given by the Pan-Pacific Club at the Imperial Hotel in Tokyo on September 28, Mr. George E. Sokolsky, Associate Editor of the FAR EASTERN REVIEW delivered the following address:—

With regard to China, my optimism is based upon the fact that no matter what happens, no matter what political calamities take place in China, the land remains, the people remain, the peasants till the soil, products are produced, and China remains where she is. And, therefore, when you view China politically, it is of no avail to say that things are bad, and that conditions are unfortunate. I could probably stand here for hours and tell you all the bad things that there are in China. But that is of no particular value, because it leads to nothing; it gives you no point of view and it offers no solution to the problems of China, and I imagine that the main task of the Pan-Pacific Club, of which I have the honor to be a member in Shanghai, is to view these questions not as problems of the immediate moment, but as ones which lead to more friendly relations among the nations of the Pacific, and in particular between China and Japan which must live together in friendship if there is to be peace in the Pacific.

The main task which has been facing the Chinese people since the Revolution in 1911 has been to find a government. In 1911 and in 1912 China attempted to become a constitutional country with a President and a Parliament and all the outward signs of western institutions, based upon a constitution modelled after those of France and the United States. But such a form of government had no relationship with the political genius of the Chinese people. The result was that this government completely failed and as a result of the failure, China was thrown back into feudalism, a condition in the course of which the country was torn by civil wars and the people has to undergo the most frightful privations. China, during this period, was governed entirely by militarists, who, as a rule, rose to their high ranks from banditry.

So for a long period of years, not very long in the history of

China but long to those of us who hope for the progress and peace of China, the country was torn by constant strife, one general fighting against his neighbor, each general seeking for a city in which he could tax the Chinese people and grow rich at their expense.

Dr. Sun Yat-sen, who may appear to many of you to have been an idealist, always said, that there could be no compromise with feudalism, that militarism was China's greatest evil and that the basis for the restoration of law and order in China must be a popular mass movement, because the authority for government in China must come from the Chinese masses.

If I may be permitted to make a comparison. Here in Japan you have an Emperor, from whom the Government receives its authority. In China there is no such authority. If the Government receives its authority from no one, it is a mere usurpation of authority. A government to be legal, a government to have the confidence of the people, must receive its authority from the people. But the Chinese people have not been prepared for that, and so Dr. Sun Yat-sen conceived a revolution in three stages. In the first stage militarism would have to continue because feudal militarists would have to be destroyed and that could only be achieved by force of arms. In the second stage, the country would have to be held in tutelage by the Kuomintang, which would conduct the affairs of the country in the interests of the people during the period when the people were being trained for the third step, which is to be democracy.

In the South, the country has entered upon the second stage of the revolution. This presents to the Chinese people a very difficult problem. The Chinese people are faced with the necessity of finding an effective method of reaching a democratic political system while at the same time they must finance themselves, they must enter upon reconstruction, they must repair the railroads which they have destroyed during their civil wars, they must repair their waterways, they must build roads, they must care for the education of the next generation.

I should like to tell you something of the difficulties of establishing a government. As you all know, in 1923 the Kuomintang became associated with the Third International through the Communist Party of China and Russia sent to China Comrade Borodin, a brilliant organizer, who, with his associates, assisted the Kuomintang to win the military and political victories they have now won. In Hankow, after the Kuomintang had reached there and before the Nanking Government was established, it became necessary for the Kuomintang to separate itself from the Communist Party of China and from its Russian alliance. But in the years of that alliance there had been great mass movements and great propaganda movements to arouse the people and to utilize the people for the purpose of achieving victory, and it must be admitted that the victories of the Kuomintang were to a great extent the victories of these mass movements which had been released and against which no army could offer resistance.

The change of policy involved a reorientation of international relationships. The Nationalist Government, instead of being the enemy of all foreigners, found it necessary and wise to assume a policy of friendship toward the foreigners.

As part of this change of sentiment the Nationalist movement found a way toward peace with Great Britain and to a certain extent that peace was achieved in the hope that there would be no further international complications so that the Nationalist government would have an opportunity to find a way toward solving international problems without coming into direct conflict with any of the Powers concerned. That, unfortunately, was not possible because of events which I feel were beyond the control of both the Nationalist Government and the Japanese Government and to which one refers to generally as the Tsinan Incident. So you have to-day, again, a difficult situation between China and Japan, but I do not believe that any of these situations are insurmountable if there is a will toward peaceful and friendly relations.

The Nationalist Government is to-day organizing on a new basis: The Soviet commission form of government is being discarded and instead of that the Kuomintang is returning to Dr. Sun Yat-sen's plan known as the Five Power Form of Government. This step is very important, because in the past one of the greatest problems which faced the Nationalist Government and which faced foreign Powers was the difficulty of doing business

with the Nationalist Government because of the irresponsibility of the Nationalist officials. Now there is to be a responsible government with General Chiang Kai-shek as Chairman.

The position of the foreigner in China is to a very large extent dependent upon the Chinese system of taxation. If the system of taxation is just and fair, we shall be able to continue to do business there; if taxes are unjust and unfair and not collected equally for Chinese and foreigners, there will always be very unfriendly feeling between the Chinese Government and foreign Powers, because it will mean that those foreigners who seek to do business in China will have no protection whatever. The treaties can only protect us in Treaty Ports where our gunboats and our soldiers are, but outside of these places we must be protected by fairness and with justice on the part of the Nationalist Government. I have no doubt but that there will be many injustices on the part of the Chinese and there will be many injustices on the part of foreigners and it will be very difficult to find a formula for a satisfactory solution. But that should not deter us from meeting the situation sympathetically.

Considerable progress has already been made in this connection by the Ministry of Finance and I desire particularly to call attention to the Consolidated Consumption Tax which is being collected with regard to tobacco and kerosene and which may be applied to other commodities. This tax is collected once at the source and before the tax is imposed the Ministry of Finance always consults with the merchants who are particularly interested in the commodity. Thus the amount is equitably fixed. Then the tax is so collected that no likin duties are paid anywhere, the Ministry of Finance protecting the tax-payers against illegal exactions. The Consolidated Consumption Tax is a tremendous advance in the theory and practice of taxation in China and affords a great measure of protection for the foreigner doing business in China.

As a basis for a viewpoint I would suggest to you that you look upon the very disorders in China—the very confusion in China, as a necessary condition of a people who go from one system of government to another, who have been steeped in medievalism and feudalism and have to work out their own salvation, who have to progress from the 12th and 13th century to the 20th century in the shortest possible time. I ask you to look upon their struggle with the greatest sympathy and with a desire to assist China as far as is possible to be a worthy neighbor of the great Empire of Japan.

British Trade and Industry

By Gilbert C. Layton, Assistant Editor of "The Economist"

(SPECIAL TO THE "FAR EASTERN REVIEW")

Iron and Steel: The Tariff Proposals

DURING the past week or two the heavy industries have been the subject of extensive public attention. In a word, there is a marked tendency to realize the seriousness of the position of Britain's heavy industries as revealed in these notes in recent months. No new fact of outstanding interest has come to light to emphasize the position of the heavy industries; it is rather that the evidence already reviewed here has had a sudden and cumulative effect. The time had certainly come—it was indeed overdue—when national attention to the problems of the heavy industries was absolutely essential. Naturally, when a whole nation considers a problem, a great number of remedies are put forward.

The present discussions have been a case in point. There has, however, been one proposal of outstanding interest which, if adopted, would be of far-reaching international importance. A certain section of the Conservative Party has been urging the extension of the Safeguarding of Industries Acts to include iron and steel. It is not easy to say exactly to what extent the industry itself is in favor of this proposal, but it is indisputably true that there is not an overwhelming majority in favor of it. A deputation has interviewed the Prime Minister, who pointed out that, in view of his election pledges, it was impossible to contemplate any such extension during the lifetime of the present Parliament. But, it may be asked, what of the future? A General Election is

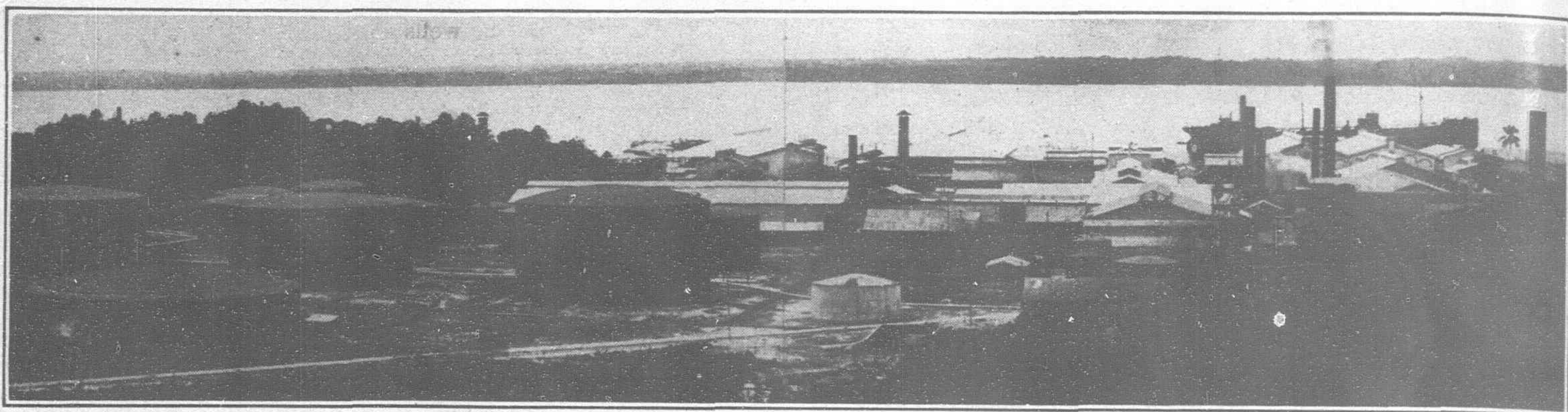
bound to take place next year. Will the Conservative Party, if returned to power, introduce a tariff on iron and steel? One or two ministers are known to be in sympathy with this idea. Will their point of view prevail?

The Prospects of a Tariff

Prophecy in the political world is highly dangerous. It seems possible, however, to indicate several broad facts which may not be unhelpful to the foreign observer. In the first place, signs are not wanting that the Conservative Party is not anxious to have the question of a tariff on iron and steel made a major issue of the General Election. In the second place, if we assume that the tariff question becomes a major issue of the election, the recent political history of Great Britain suggests the probability of the party championing it being defeated. But even if it were not defeated a considerable period must elapse before definite action could be taken.

It is almost certain that the machinery of the Safeguarding Acts would be inadequate; the importance of a tariff on iron and steel would be such that a special tariff commission would have to be appointed and its deliberations would extend over a considerable period of time. In a word, the position may be summed up thus: it seems unlikely that there will be a tariff on iron and steel, but even assuming that such a tariff is imposed action will not be possible for well over a year and possibly for two years.

(Continued on page 453).



Royal Dutch Petroleum Works at Balikpapan, showing portion of Plant, Docks and Storage Tanks. To the Right is a Tank Steamer loading, Also the Paraffine Wax Factory, Capacity 2,000 Tons Per Month, and the Lubricating Oil Works, Capacity 1,200 Tons Per Month. To the Left is the Candle Factory With a Capacity of 350 Tons Per Month

Petroleum Refineries in Asia

ONE of the most interesting of the recent trade bulletins issued by the Department of Commerce deals with petroleum refineries in foreign countries, compiled, by Mr. John H. Nelson, chief of the Petroleum Division. Dr. Nelson, is well known to our readers in China having served as U. S. Trade Commissioner in Shanghai and after resigning from the service was interested for some time in one of the American Upper Yangtse shipping companies. In recent years, the greater number of foreign sources of crude oil and the efficient utilization of petroleum have contributed to the establishment of petroleum refineries in many foreign countries, offering a potential market for factory equipment. We reprint that part of the report which covers Asiatic field.

Persia

The following information is based upon data furnished by the Anglo-Persian Oil Co. (Ltd.), the sole company operating a refinery in Persia. This refinery is located at Abadan, on the Persian Gulf. The plant equipment is modern and the source of crude petroleum lies in the district around Masjid-i-Sulaiman, in southwest Persia. The products are kerosene, benzine, and fuel oils, the total output of refined products for the fiscal year ending March 31, 1926, being 2,950,000 tons.

The Khanaqin Oil Co. (Ltd.), a subsidiary of the Anglo-Persian Oil Co. (Ltd.), has erected a small refinery at Khanikin, close to the Persian-Irak border. No details of the plant equipment or capacity are available at this time.

India

There are only four petroleum refineries in Burma and one of these, belonging to the United Oil Refineries (Ltd.), has never been operated.

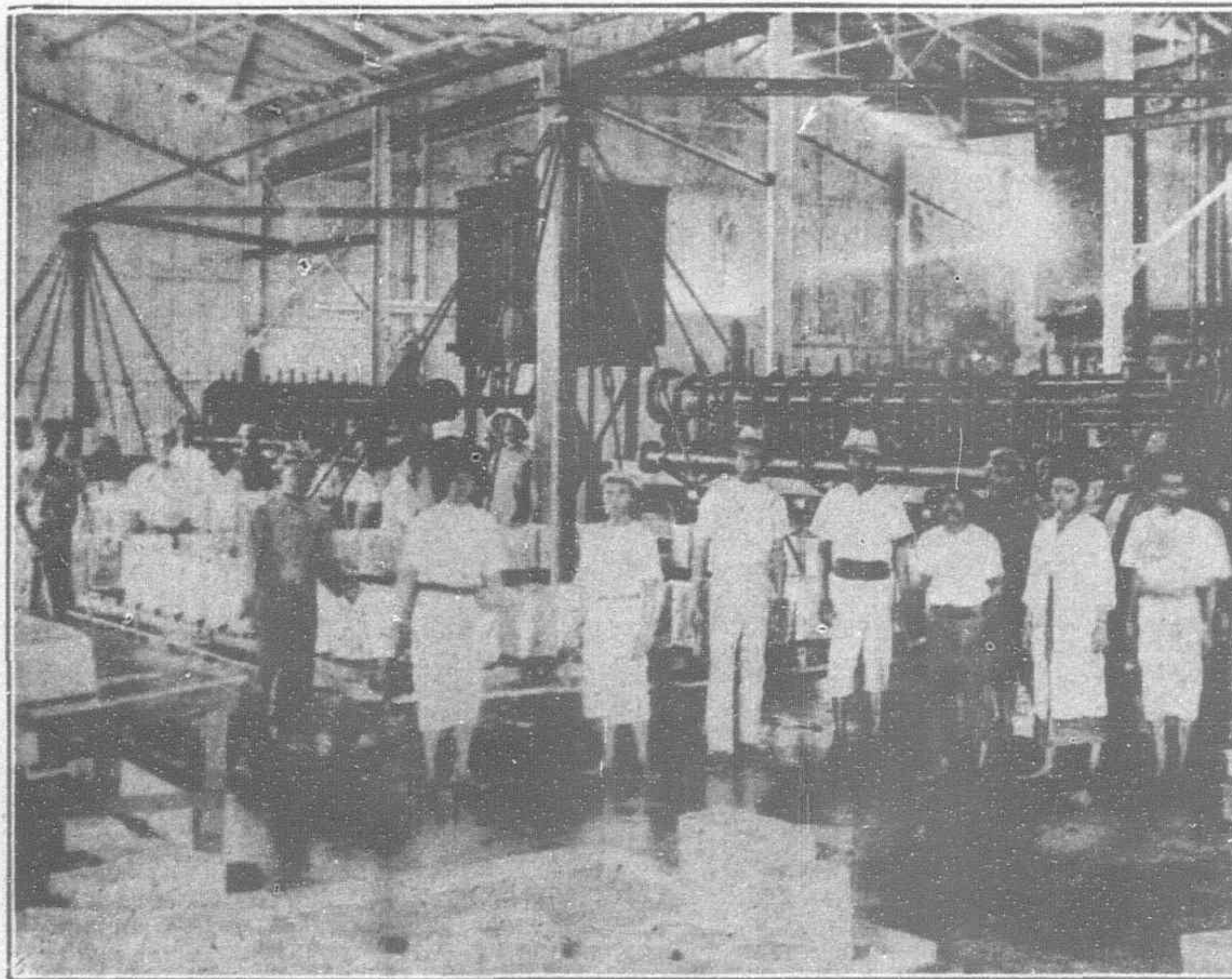
The largest refinery in Burma is located at Syrium and is owned by the Burma Oil Co. Its stated capacity is 20,000 barrels a day though 25,000 barrels a day would probably be a conservative estimate of its full capacity. The plant equipment is of the latest design. The quantity of crude petroleum now being run through the plant is approximately 16,000 to 18,000 barrels a day. It is believed that the reason this plant has a capacity in excess of actual requirements lies in the fact that the Burma

Oil Co. is closely associated with the Anglo-Persian Oil Co., and should their Persian refinery at Abadan break down it would be possible and desirable to ship crude oil to Rangoon to be refined.

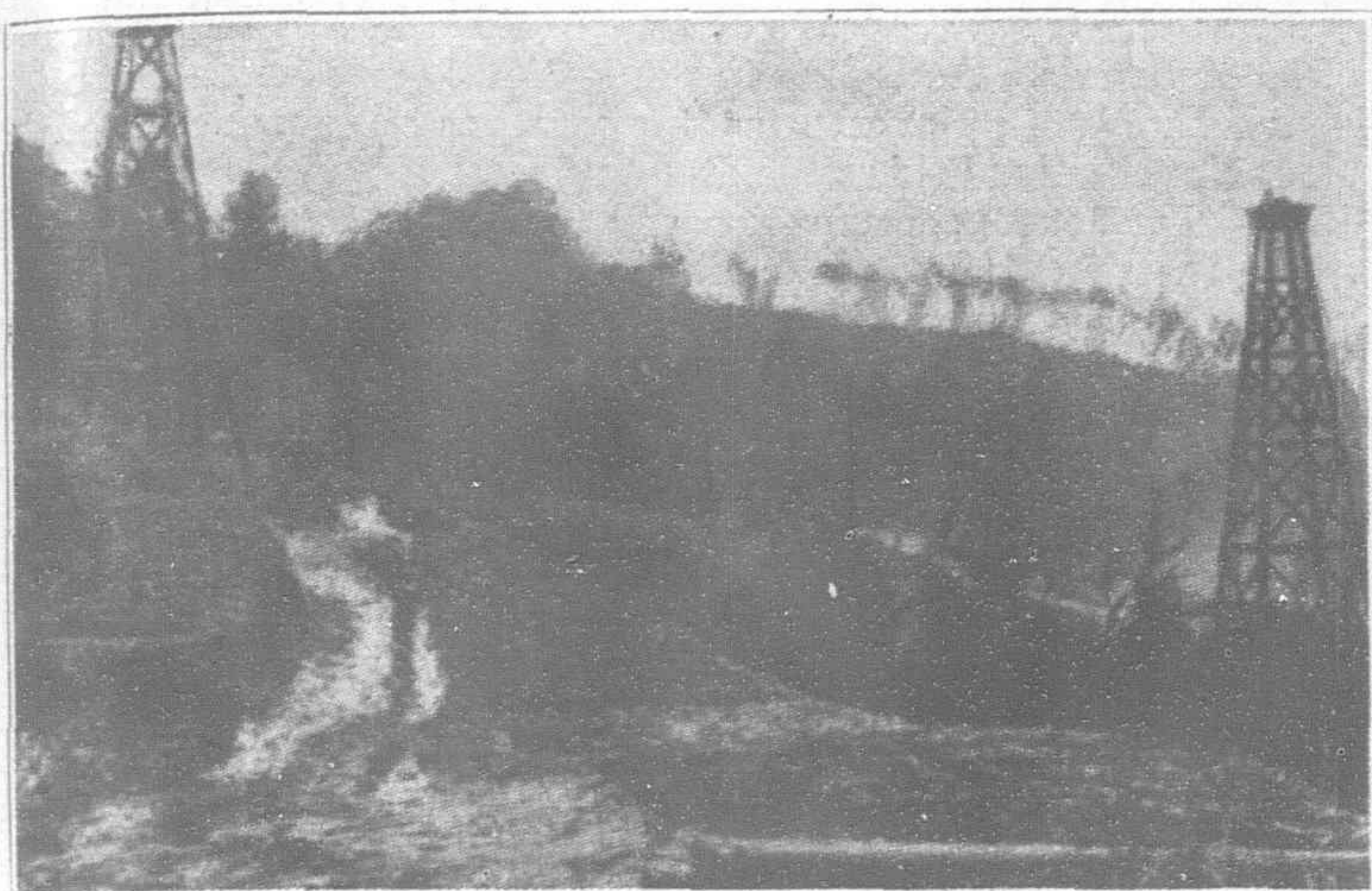
The Burma Oil Co. obtains its crude petroleum from fields in Upper Burma. This company now holds an area under mining lease in Burma of about 50 square miles and one under a prospecting license of about 62 square miles. The number of wells drilled is over 1,500, with more than 1,000 in actual operation. The principal producing area of the Burma Oil Co. is the Yenangyoung field on the Irrawady River, 250 miles north of Rangoon. This field is electrically operated with the most modern equipment. Besides the drilling of over 1,000 wells in Yenangyoung, the neighboring fields of Yenangyat, Singu, Minbu, Palanyou, and Yethawa, have been opened up, varying in size from 100 wells in Minbu to some 200 in Singu. The daily crude-oil output of all the Burma Oil Co.'s fields in Burma is about 14,000 barrels. This is pumped to the Rangoon refinery through a 10-inch pipe line 275 miles long, a series of six pumping stations being located at Singu, Nyoungkala, Kanhla, Thegon, Tharrawaddy, and Kyaukchoung. The Burma Oil Co. manufactures kerosene, gasoline, lubricating oils, greases, wax and candles.

The second largest refinery in Burma is located at Thilawa and is owned by the Indo-Burma Petroleum Co. (Ltd.). This plant is very old. Intermittent repairs have been made, with occasional installations of new stills. The company obtains its crude petroleum from the Yenangyoung and Singu oil fields, having a crude-oil production amounting to approximately one-tenth that of the Burma Oil Co. Products manufactured include kerosene, gasoline, lubricating oils, greases, wax and candles. The approximate capacity of their refinery is 3,000 barrels per day, the plant being operated at full capacity. No new refinery installation is contemplated, although new equipment is occasionally purchased, as required for replacement.

The British Burma Petroleum Co. (Ltd.) has a refinery at Seikkyga. The plant is old and consists largely of an old installation purchased from the Burma Oil Co., which had been used in a refinery at Danidaw. Crude petroleum is obtained from the Yenangyoung and Singu fields. The products manufactured include kerosene, gasoline, lubricating oils,



Petroleum Can Filling Apparatus at Pulau Brandan



The Torikoya Field, Niigata, of the Great Japan Petroleum Company

greases, wax and candles. The capacity of the refinery is approximately 2,500 barrels a day. The British Burma Co. sell its refined products through and under the name of the Burma Oil Co. It is therefore impossible to know which of the two companies has actually manufactured the products sold by the Burma Oil Co. No changes in plant equipment are contemplated. There have been persistent rumors, however, that the British Burma will be absorbed by the Burma Oil Co.

The United Oil Refineries (Ltd.), a company controlled by Indian capital, has constructed a refinery at Rangoon. The equipment here is new, but as it has never been used it is now falling into a state of disrepair. With a capacity of 2,000 barrels per day the plant has never been able to operate, owing to the lack of a crude oil supply. While the plant is said to have cost £250,000, it is believed that the entire installation could be purchased to-day for approximately £10,000.

EXPORTS OF PRODUCTS OF BURMESE REFINERIES.

Product	1923	1924	1925
Gasoline imperial gallons	31,916,225	38,045,198	32,761,958
Kerosene do	131,969,688	128,990,768	124,831,568
Batching oils .. barrels	88,746	100,445	86,503
Lubricating oil .. do	57,302	70,943	75,746
Grease do	3,487	5,173	2,892
Wax and candles .. long tons	30,210	35,268	35,464

East Indies

The 11 refineries and 1 topping plant in the East Indies are distributed as follows: 5 refineries in Sumatra, 4 in Java, 2 in Borneo, and the topping plant located on the island of Ceram, one of the smaller islands of the group farther to the east. One of the two refineries in Borneo is located at Miri, in the State of Sarawak, an independent State under British protection. This refinery is operated by the Sarawak Oilfields (Ltd.), a subsidiary of the Royal Dutch.

The Bataafsche Petroleum Maatschappij (hereafter referred to as the Batavian Co.), also a subsidiary of the Royal Dutch, either operates or controls seven of these refineries—four in Sumatra, two in Java, and the refinery at Balikpapan, in Dutch East Borneo, this latter being by far the largest refinery in the East Indies. The topping plant at Boela Bay, on the island of Ceram, is likewise controlled by the Batavian Co. The Royal Dutch group therefore controls 8 of the 11 refineries in the East Indies, 7 in Dutch territory, and 1 in the British protectorate of Sarawak, in Borneo, as well as the topping plant on Ceram.

Two of the three remaining refineries, one recently completed at Soenei-Gerong, near Palembang in southern Sumatra and a small refinery at Kapoean in the Samarang district in east central Java are owned by the Nederlandsche Koloniale Petroleum Maatschappij (hereafter referred to as the Dutch Colonial Co.). The last of the East Indies refineries, located at Klantoeng, near the Klantoeng-Sodjomerto concessions in Java, is owned by the Algemeene Petroleum Co.

In each case the crude petroleum handled by the foregoing refineries is obtained from concessions located in the general vicinity of

the refinery, the producing wells and refinery being operated by the same controlling interests. Gasoline, kerosene, terpene, fuel oil, asphalt, lubricating oils and greases, as well as paraffin, are obtained from the various refineries in the East Indies. There is, however, considerable variation in the quality of the crude oil produced on the different islands. Nearly all of the Sumatra crude oils are especially rich in light products and, generally speaking, contain little or no paraffin. The Borneo crude oils vary considerably in composition, even in the same field. The Java oil yields, as a rule, little benzine. Some crude oils do not contain even kerosene; others are of a strong paraffin base. The factories at Java and Borneo put a large quantity of the finest paraffin wax on the market. A large part of the wax is used for candles, which, on account of the high melting point of Borneo paraffin, are particularly suitable for use in the Tropics.

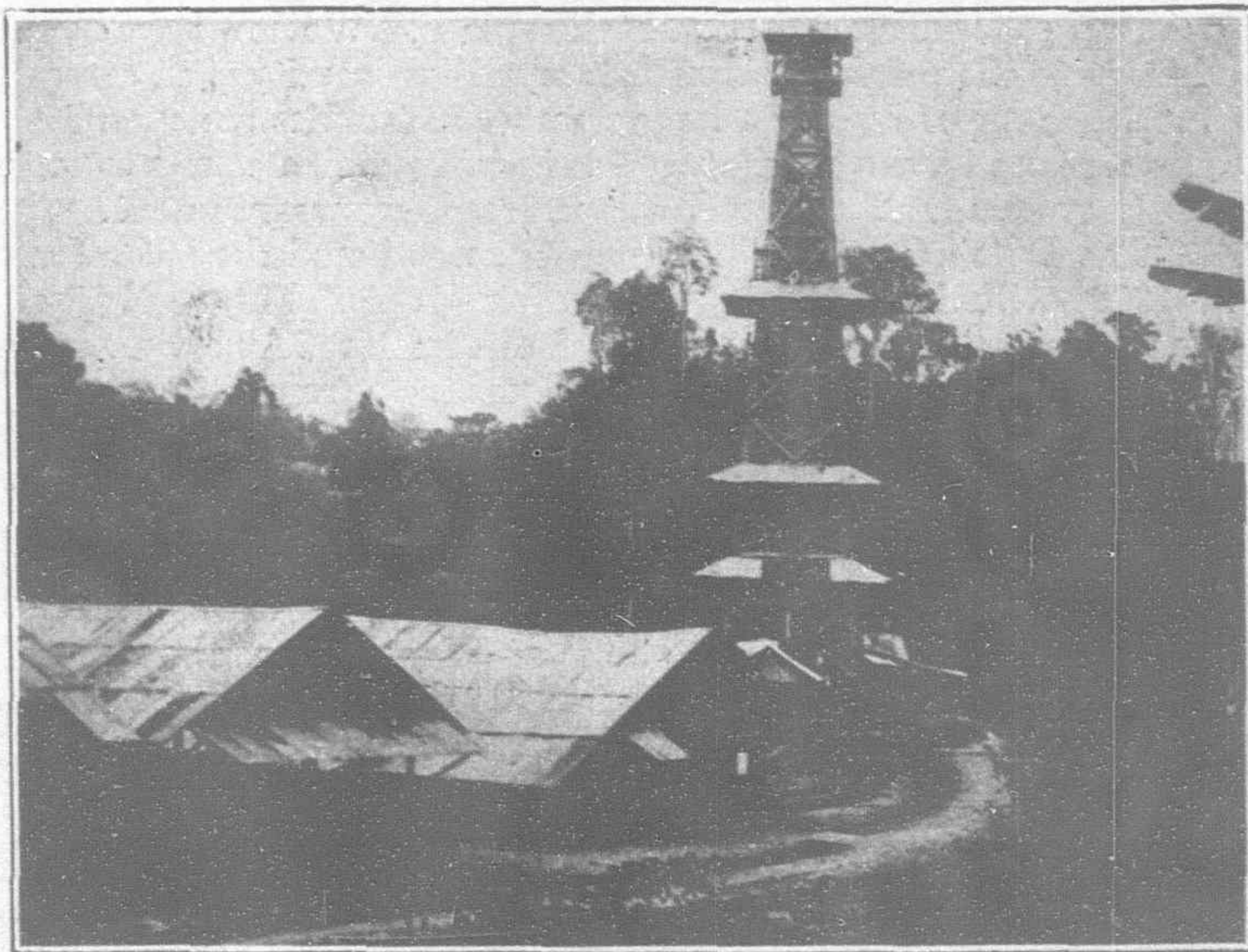
Further details concerning the refineries on each of the various islands in the East Indies follow.

Sumatra

Two of the five refineries in Sumatra are located along the north-east coast and toward the northern end of the island, one at Perlak, on Cape Peureula, in the Atjeh Residency, and the other at Pangkalan Brandan in the Oostkust Residency, further to the south. At Perlak, the Batavian Co. owns a complete plant for the distillation and refining of gasoline. This plant is connected with the refinery at Pangkalan Brandan by 6-inch and 10-inch pipe lines, about 70 miles long.

The refinery at Pangkalan Brandan, likewise owned by the Batavian Co., is the largest in Sumatra. It is on the Babalan River, about 13 miles from Pangkalan Susu, the port of the refinery. Established in 1892, the Pangkalan refinery has been enlarged from time to time, having a present daily capacity of 10,000 barrels. In addition to the pipe lines from Perlak, there are two 6-inch, one 4-inch, and one 10-inch pipe line from the refinery to the terminal at Pangkalan Susu. At this latter point is a can factory, a fueling station, and storage facilities. The refinery is chiefly used for the production of gasoline and kerosene. Crude oil from the northern Sumatran fields is very rich in light distillates, yielding 30 per cent. or more of high-grade gasoline, in addition to 40 per cent. or more of excellent kerosene. No recent figures are available that show the gasoline and kerosene output of these two refineries. Based on the available crude oil, an estimate for 1921 places the gasoline at about 40,000,000 gallons and the kerosene at 50,000,000 gallons.

The other two refineries operated by the Batavian Co. lie in the Palembang district, in the southeast portion of the island. One is at Pladjoe and the other at Bagoeskoening, both points along the Moesi River, a few miles below the port town of Palembang. These two plants constitute a complete refining unit, with a daily capacity now said to exceed 10,000 barrels. Gasoline, kerosene, lubricating oils and greases are manufactured. The crude oil is either piped to the refineries or brought down the Moesi River in barges from Kajoe, an 8-inch pipe-line terminus from the north Babot field. Two



Lucy Rotary Well Driving Installation at Soengei Doea

4-inch pipe lines, 87 miles long, connect the Pladjoe plant with the Kampong Minjak field. Still another pipe line brings crude oil from the Melamoen district, a distance of 141 miles.

In 1921, the last year for which information is available, the following quantities were exported from Palembang: Gasoline, 38,000,000 gallons; kerosene, 22,000,000 gallons; lubricating oils, 660,000 gallons; and lubricating greases, 389,000 pounds; besides limited quantities of crude oil, fuel oil and asphalt. The output of these refineries, largely exported as indicated above, finds a ready market in the Orient, Europe, Africa, and Australia. In addition to a probable increase in the production of these two refineries since 1921, the foregoing quantities will be further increased during 1927 by the output from the new refinery at Soengei-Gerong, in the same district.

Soengei-Gerong lies along the Moesi River, on the opposite bank from Pladjoe. The official opening of this refinery took place on December 17, 1926. Built by the Dutch Colonial Co. at a cost of approximately \$4,000,000, this plant will ultimately draw its supplies of crude oil from seven newly granted concessions in the Palembang district. At present, however, crude oil is only being produced in the Talang Akar concession, where some 40 wells are in actual operation. An 81-mile pipe line, for the most part underground and passing under three rivers, carries crude oil from this concession to the refinery. The installation at Soengei-Gerong is thoroughly modern in every respect, the latest design of cracking process being used. The initial capacity of the plant is 4,000 barrels of crude oil per day, the principal products being gasoline and kerosene. In addition to the modern boiler and power installation with steam and electrical distributing lines, water-pump facilities, and ample storage tanks, the plant equipment includes a special installation for the use of liquid sulphur dioxide in the manufacture of high-grade refined oils.

Owing to the low, swampy character of the whole Palembang region difficulties were encountered in the building of this plant. An interesting appreciation of some of the work involved in a tropical installation of this kind can be had from the following extracts from the principal address delivered at the official opening celebration at Soengei-Gerong.

The work executed here probably represents a record as to the speed with which the construction has been completed. The entire installation, including storage tanks, pipe lines and all mechanical equipment, together with the housing and recreation facilities for the employees, was completed in the brief period of only 18 months. Before any construction could be begun, however, we were obliged to fill in this large tract of land with sand from the river bed. This work involved the displacement of nearly 800,000 cubic yards. In order to protect this fill against damage from the river it was further necessary to install a concrete sheet piling bulkhead along the edge of the river. I clearly recall coming here for the first time some nine years ago and finding a territory consisting entirely of jungle and swamp in which only crocodiles, monkeys, and mosquitoes thrived. More recently, two years and a half ago, this same jungle was only partially cleared away. Upon my last return several days ago I could scarcely believe my eyes, so great were the changes that had taken place. We now have here, in addition to the refinery, a complete small community with agreeable practical houses in which a large number of families are established. Moreover, we have a clubhouse, a swimming pool, a complete water-supply system, and a fully developed sanitary arrangement.

The Dutch Colonial Petroleum Co. was founded at The Hague in 1912, with head offices in the Petrolia Building in that city. While controlled by a Dutch board of directors, American capital has been drawn upon. The finished products from this company's refineries in the West Indies are marketed by the Standard Oil.

Java

Of the four refineries on the island of Java, two are controlled by the Batavian Co. Of these, one is at Wonokromo, about 5 miles south of the port town of Sayabura, Sayabura being in the eastern part of Java, off the Straits of Madura. The other of these two refineries is at Tjepoe, some 40 miles south and east of the port of Rembang, farther to the west from Sayabura and along the northern coast. These two plants were originally established by the Dordtsche Petroleum Maatschappij, the former in 1890 and the latter in 1894. This company was brought under the control of the Batavian Co. in 1911.

The refinery at Wonokromo is now said to have a daily capacity of 2,000 barrels. According to production figures furnished to the Dutch East Indies Government, the average daily production of the three contributing fields amounted to a total of 1,200 barrels during 1925. The actual consumption of Wonokromo probably averages about the same. The crude-oil supplies arrive in tank cars from various concessions in the Sayabura district. Storage tanks for both crude oil and refined products are provided, the main product of the refinery being a low-grade kerosene, most of which is marketed locally. A small amount of gasoline, of rather poor quality, is also produced. Lubricating oils are made and sold to the sugar and rice mills of Java, as well as to the automotive trade, though here again the quality is inferior.

The refinery at Tjepoe is a complete plant, with a capacity said to be 6,000 barrels per day. It is known that in times past the actual production of this plant was frequently limited by an insufficient supply of crude oil from the company's available leaseholds. More recently, however, the Batavian Co. has increased the number of its leases in Java, to the end that a more satisfactory supply of crude oil is now assured. According to reports submitted to the Dutch East Indies Government for 1925, the average combined daily production from the Batavian Co.'s holdings in the Palembang and Semarang districts, both tributaries to Tjepoe, amounted to 9,500 barrels. Much of the crude oil handled at this refinery carries a high-grade paraffin, which is especially suitable for the manufacture of candles, a candle factory being operated by the company in conjunction with the refinery. Gasoline and kerosene, both of a good grade, are the principal products manufactured at Tjepoe.

For some years the Dutch Colonial Co. has operated a small refinery at Kapoean, about 5 miles southwest of Tjepoe. Owing to the limited production of crude oil from this company's holdings in Java, however, and to certain difficulties in connection with increasing its leaseholds there, the refinery at Kapoean has been operating at only about one-fifth of its full capacity of around 1,000 barrels. Should no additional producing territory be obtained in the near future, it is the intention of the Dutch Colonial Co. to cease operation entirely at the Kapoean refinery.

The last of the four refineries in Java is located at Klantoeng, near the Klantoeng-Sodjomerto concessions in the Semarang district, farther to the west from Tjepoe and Kapoean. This concession, as well as the refinery, is owned by the Algemeene Petroleum Co. The output is relatively small, the principal product being a limited quantity of kerosene, which is distributed locally. The residue is used as fuel at the plant or sold locally when a surplus exists. In 1920, the last year for which production figures are available, a total of 2,600 barrels were handled.

Borneo

At Balikpapan, on the east coast of Borneo, in Dutch East Borneo, is located by far the largest refinery in the East Indies. Owned by the Batavian Co., this plant is now said to have a daily capacity of more than 30,000 barrels. Crude oil is received at the refinery through pipe lines from the various contributing centers in the Koetei fields, the longest of these lines being a 5-inch pipe from the Sanga-Sanga wells, 65 miles away. The crude oils obtained vary from a light oil of 0.84 specific gravity to heavy asphaltic grades having a specific gravity of 0.96. Thus, practically all petroleum products from light distillates to asphalt and dyestuff are produced. A sulphuric acid plant is also run in conjunction with the factory. The gasoline manufactured, however, is of such high quality that sulphuric acid treatment is not required.

By the use of the Edeleanuan process of washing kerosene with sulphuric acid to free it from tarry products, the Balikpapan produces a very large quantity of high-grade kerosene, the kerosene plant having been substantially enlarged during the last few years. In addition to the kerosene output, all commercial grades of paraffin are produced with melting points ranging from 125° to 140° F. Some of the heavier oils from the Koetei pools are refined into lubricating oils. While these oils are not equal to corresponding American products, constant laboratory researches and the adoption of advanced refinery technique have greatly improved upon the quality of the lubricating oils produced.

In addition to the refinery, one of the largest fueling stations in the Orient is maintained at Balikpapan. With a large storage capacity and adequate fueling facilities, vessels can be rapidly bunkered in a few hours.

The other refinery in Borneo is at Miri, on the northwest coast, in the British protectorate of Sarawak. It is operated by the Sarawak Oil Fields (Ltd.), another subsidiary of the Royal Dutch Co. Crude petroleum refined here is drawn from the Brunei territory, just north of Miri, as well as from the region inland and southwest from Miri. The Brunei fields are understood to be owned or controlled by the British Malayan Petroleum Co., for which the Sarawak Oil Fields (Ltd.) act as agents. The equipment of this refinery is modern, the principal products manufactured being gasoline, kerosene and fuel oil. There is a fueling station in the same locality.

As the local consumption of products from the refinery at Miri is very slight, the official Sarawak export statistics can be considered as closely approximating the actual output of the refinery. The following export figures are in long tons and American dollars :

Oils	Quantity		Value	
	1925 Metric tons	1924 Metric tons	1925	1924
Gasoline	91,670	71,931	\$7,995,000	\$6,273,000
Kerosene in bulk ..	102,502	105,146	3,505,000	3,596,000
Kerosene in cases ..	*6	*1,507	18	5,150
Fuel oil	203,531	262,327	1,972,000	2,542,000

*Number of cases.

The following official data have also been obtained, showing the quantities in metric tons exported during the first four months of 1926 :

	1926	Benzine	Kerosene	Fuel oil
April	5,048	11,958	17,542
May	9,949	6,342	14,759
June	11,167	7,725	42,608
July	6,336	6,503	18,092
		32,500	32,528	93,001

On Tarakan Island, off the northeast coast of Borneo, is a plant at which the crude oil from the Tarakan fields on the mainland is prepared as fuel oil. There is no refinery at this point, the crude oil being of such quality that by a very simple process the water and sand can be removed, rendering the oil immediately suitable for bunkering without further treatment. Ample storage facilities exist for both crude oil and the prepared fuel oil. Besides distribution through a fueling station on Tarakan Island, considerable quantities

of both crude oil and prepared fuel oil are exported, much of it to Japan.

Ceram

The small topping plant at Boela Bay, on the northeastern coast of Ceram, was originally set up in Java, where it was the property of the Rembang Industrial Co. In 1918 the equipment was purchased by the Dordtsche Petroleum Co. (already a subsidiary of the Batavian Co.) and transported to Ceram. The crude oil from the oil fields in Ceram has since that time been topped for the lighter products at Boela Bay, the topped crude being then shipped to the Batavian Co.'s refinery at Balikpapan for the final refining processes. The residue is sold in Ceram, at a small fueling station near the topping plant. The last available statistics show that the production of crude oil in the Ceram fields in 1921 amounted to about 333,300 barrels.

Japan

Information relative to petroleum refineries in Japan is given in the following tables :

Location	Ownership	Plant equipment	Source of materials	Capacity Barrels
Kashiwazaki, Niigata	Nippon Oil Co.	Old	Japan ..	2,200
do	do	do	do ..	1,650
Niigata, Niigata 1	do	New 2	Japan and America	900
Akita, Akita 3	do	Old	Japan ..	3,300
Tsurumi, Kanagawa 1	do	New 4	Japan and America	1,000
Hokkaido, Hokkaido 5	do	Old	Japan ..	(6)
Taiwan, Taowan 5	do	do	do ..	(6)
Oshima, Tokyo 1	Ogura Oil Co.	New 7	Borneo and Japan	500
Tokyo 1	Asahi Oil Co.	Old	Borneo ..	500
Tokuyama 8	do	do	do ..	(6)
Niitsu, Niigata 1	Kyodo Hambaijo	do	Japan and Borneo	600

- 1 Gasoline, kerosene, lubricating oils and gas oils.
- 2 Equipped with cross cracking plant.
- 3 Kerosene, gas oils, lubricating oils and asphalt.
- 4 Equipped with Dubbs cracking plant.
- 5 Crude gasoline, wax distillate, lubricating oils, kerosene, gas oils and grease.
- 6 Not available.
- 7 Equipped with Jenkins cracking plant.
- 8 Gasoline, kerosene, gas oils and fuel oils.

The Foochow Electric Light Company, Limited

By K. Masuda

THE Foochow Electric Light Company, Ltd. was established in 1911 with a capital of \$120,000. Mr. Liu Tsung-wei, present President of the company and Mr. Liu Tsung-lun, his younger brother and now Engineer-in-Chief were among the promoters who carried out the scheme with the assistance of the local officials and gentries. Upon completion of the plan, they purchased a lot covering 1,218 square ft. in area on the riverside near Hsinkong. On October, 1912, operations were started with a plant comprising of two Babcock & Wilcox steam-tube boilers and two B.T.H. 150 k.w. alternators fitted with Belliss engine. The capital has been increased from to \$300,000 in 1914, when one G. E. 500 k.w. alternator has been added to the plant. expansion of the business territory ing larger equipment, the company again in-capital from \$300,000 to \$1,200,000, and one G. E. 1,000 k.w. turbo-generator and one boiler to match it have been additionally installed. In 1922, the two B.T.H. 150 k.w. turbo-generators installed have been replaced by one G. E. 1,000 k.w. turbo-generator.

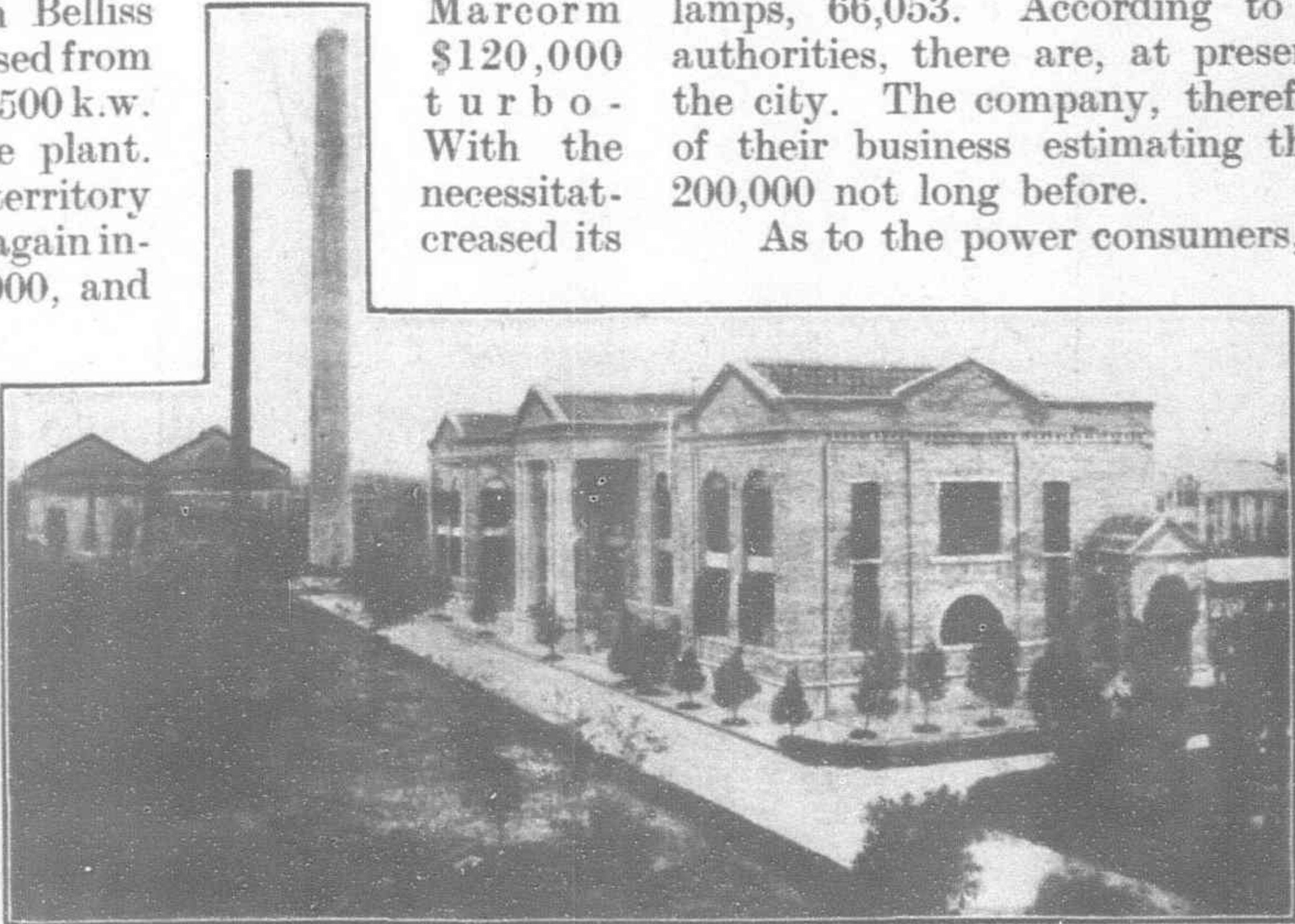
Though the company have been often badly affected by civil wars followed by political upheavals, they could well maintain their situation. In the recent years, the average annual revenue amounted to

about \$800,000. At present, the plant has a generating capacity of about 21,000 k.w., namely 3,500 k.w. in daytime and 17,500 k.w., in night time. In order to make the local factories and mills utilize electric power, the company are showing them examples, running various enterprises such as ice making, saw milling and oil milling.

At the first stage of operation, there were only 575 consumers with a total number of lamps of 4,093. At the sixth stage, however, the number of consumers reached to 7,190 with 35,073 lamps. Now there are 12,000 consumers with a total number of lamps, 66,053. According to the census made by the local authorities, there are, at present, 57,800 houses in and around the city. The company, therefore, are optimistic as to the future of their business estimating that number of lamps will reach 200,000 not long before.

As to the power consumers, there were only 23 with 214 h.p. in 1920. At present, the company are supplying power to over 100 consumers.

The higher staff of the company consists mostly of returned students from America and Japan including Mr. Liu Tsung-lun, Engineer-in-Chief, graduate of the Tokyo High Politechnical College, Mr. Sun Hsi-hua, General Manager, graduate of an American University and Mr. Lee Cheong-kan, Superintendent, graduate of the Tokyo Imperial University.



General View of the Foochow Electric Light Co., Ltd.

Highway Transportation in Szechuan

Roads Precede Railways in Szechuan and Kweichow—Motor Transport Increases Despite High Taxes and Gasoline Prices—Old Prejudices Fail to Halt Progress

By Julean Arnold, American Commercial Attache in Peking

WHERE else in the world is there to be found a population of 50,000,000 people, occupying an area nearly as large as that of the State of Texas, and yet without one mile of railway? Szechuan in central-west China is one of the country's wealthiest Provinces and grows nearly everything produced elsewhere in China. Although its southern boundary is skirted by the Yangtze River, transportation is perilous and expensive because of the fierce rapids in the upper Yangtze. This great central waterway, therefore, is not the artery of commerce to the people of Szechuan that it would appear to be for the casual observer studying the map of China, and Szechuan consequently is still cut off economically from the rest of the country and from the outside world. The Province is almost self-sustaining. It lies within the rice belt of China and shares the same methods of transportation that characterize the rice-producing section of the country. Wheelbarrows, sedan chairs, coolie carriers and pack animals have constituted the mediums of land transportation in Szechuan Province.

Railway Development Hampered by Conservatism

By air line the capital of this Province, Chengtu, is about 1,000 miles from either Peking or Shanghai. To get a letter to Peking from Chengtu requires from three weeks to a month. Efforts have been made during the past two decades to penetrate Szechuan from Hankow or other sections of Central China by the railway, but a combination of unfavorable circumstances, including conservative and uniformed ideas on the part of the masses, have militated against success in this direction. Szechuan for the Szechuanese is the natural outcome of the isolation of this province.

Effect of Ancestor Worship on Transportation

The cities and towns of Szechuan have been so long populated that in some places the surrounding graveyards have come to occupy more space than the cities or towns themselves. The Chinese veneration for their dead, which is associated with the ideas of ancestor worship, has generally been considered so deeply rooted that, in spite of what may happen otherwise in China, it has been anticipated that this condition will persist as an obstacle to progress in many directions.

A recent writer makes the following comment regarding the widening of the streets of Chungking, Szechuan's commercial metropolis:

On the map the city is shaped not unlike a foot, with two rivers drawing in back of the heel to form the ankle. This ankle is thickly covered with graves extending over a wide area. The problem of breaking the strangle-hold of the dead, in any attempts to improve Chungking's communications, is now being solved in a thorough going fashion. Notice was served on the people whose family graves fall within the confines of a proposed 60-foot road traversing this ankle, to remove the graves at once, otherwise it would be presumed

that no one was interested, and the authorities would then themselves take charge of the removals. The present scene along this right of way is startling to one who has lived in China and has known how they regard the resting place of the dead. Everywhere are to be seen holes from which coffins have been taken. In places where a cut has been necessary, the workmen have sometimes found the graves three or four deep, testifying to the antiquity of this burial ground.

Old Prejudices Passing

Ten years ago no official would have dared to embark upon a drastic course involving the removal of graves, as the opposition from the masses would have prevented his making any headway in this respect. The condition is not unlike that obtaining in other sections of China. Graves are no longer considered insurmountable obstacles to progress where they stand in the way of modern developments. Not only are the thoroughfares of the principal cities of Szechuan being widened from lanes into streets but they are being connected with country roads so as to open up the Province to the use of wheeled vehicles including, of course, motor transportation.

The fact that two remote Provinces, Szechuan and Kweichow, have actively embarked upon extensive road-construction programs, in spite of political instability and disordered conditions generally, indicates very clearly the changed attitude of mind of the Chinese people toward modern innovations. They are now ready to lay aside their past prejudices, at least to an extent sufficient to permit fundamental economic improvements.

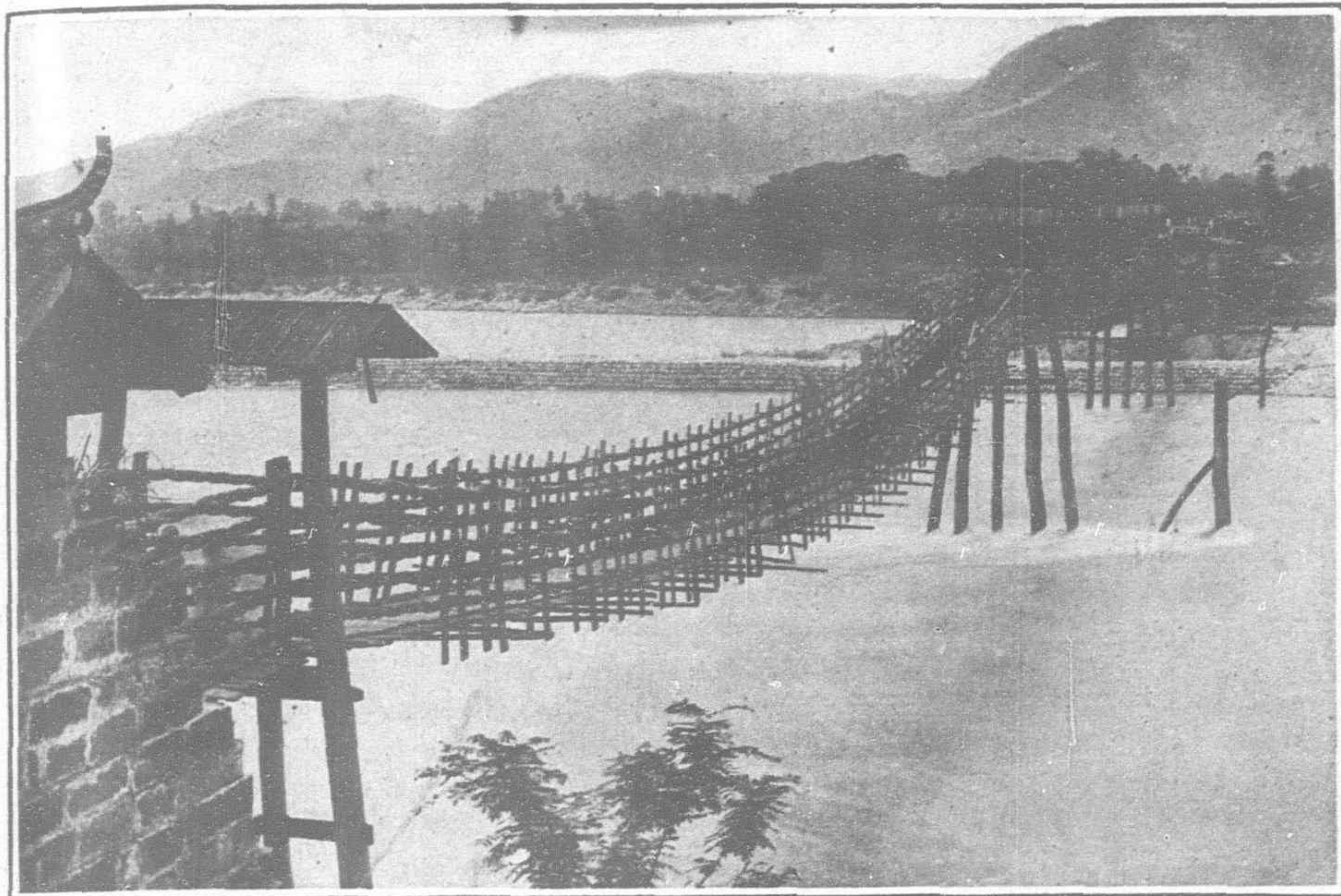
Road Development Centers in the Capital

Chengtu, the capital city, which next after Peking is probably China's most beautiful walled city, has a population of about 400,000. It is situated on the very fertile Chengtu plain which, within an area of 40 by 90 miles, contains a population of about 4,000,000. Geographically, it is practically in the center of the Province, and the problems of road construction in Szechuan thus center about Chengtu.

The Province is very mountainous and, instead of being called "The Province of the Four Rivers," which Szechuan really means, it might better have been designated "The Province of the Ten Thousand Mountains." It is rich in valleys and fertile lands and will undoubtedly show a considerable mineral wealth when properly exploited. Its greatest economic problem for the immediate future is that of transportation. A network of roads has been planned to radiate from Chengtu, of which the most important is that between Chengtu and the commercial metropolis, Chungking, on the Yangtze River, a distance of about 250 miles. When this road is completed travellers from the Yangtze Valley destined to Chengtu will be able to make the trip



A Szechuan Road



A Rope Bridge Kwan Hsien, Chengtu, Szechuan Province

from Chungking to the capital city by motor bus in a day, whereas now it requires 9 or 10 days, using a sedan chair.

Mileage and Types of Road Construction

In Szechuan Province there are already completed roads aggregating about 300 miles, with about 400 miles more under construction and an additional 600 or 700 miles of proposed roads. Some of these have been constructed by military or civil officials some by semi-official companies holding monopoly rights for motor transportation over the roads, and others by commercial companies in connection with special concessions for the running of bus and truck lines.

The new country roads in Szechuan usually measure from 25 to 30 feet in width. For the most part, they are dirt-graded thoroughfares, but are destined to be replaced by macadamized roads. One of the military generals is surfacing the roads in his district with crushed rock and has sent an order to Shanghai for a rock crusher and a steam roller for that work.

Road Construction in Kweichow

In Kweichow Province, south of Szechuan, a very considerable amount of road construction is also under way. The governor of that Province is building a 300-mile road from Kweiyang to Chihshui, about 20 miles from the Yangtze River, and this road later will connect Kweichow's important commercial city with the Yangtze. Plans are under way also for a road leading from Chengtu into Tibet.

Motor Busses Force Street Widening and Aid Ricshas

Formerly the standard width of a city street in Szechuan Province, as in cities generally throughout the rice-producing section of China, was gauged by the width of a sedan chair. On the main street, it was necessary to permit the passing of two sedan chairs going in opposite directions. Coolie carriers or pack animals passing through these cities took up no more room than did the sedan chair. With the introduction of the motor bus on country roads, the city streets have had to be widened, and this has made a place also for the ricsha. During the past few years thousands of these pneumatic rubber-tired and ball-bearing man-pulled vehicles have made their way into Szechuan Province; they are not confining their operations to the cities but may also be seen operating for limited distances on the country roads.

Gasoline Prices and Taxes Hamper Motor Transportation

Motor-bus companies are being organized and are operating in Szechuan Province with gasoline costing Mex. \$4 a gallon (about gold \$2). Thus, gasoline in Szechuan costs tenfold what

it does in the United States. This indicates very clearly the expense of transporting goods from other sections of China or from the outside world into Szechuan. The transportation through the Yangtze gorges is not the only expensive item, as heavy internal taxes also stifle trade. In the aggregate there are now in Szechuan Province about 75 motor cars of all sorts.

Roads May Assist Other Transportation Development

The motor car has preceded the railway among the 50,000,000 people in this Texas of China. However, it is likely that within the near future the Szechuanese will find that it will be to their advantage to lay ties and rails on some of their main motor roads and thereby provide the necessary trunk lines for freight transportation. The Province abounds in coal and potential hydroelectric resources. Thus, a population which two decades ago rebelled against the idea of railway penetration from the eastern section of their country will, as conditions become more stabilized, be prepared to develop railway contact with other sections of China, realizing its importance to the building up of trade and industry in their own Province.

It would be difficult to conceive of a region anywhere else on the face of the earth which could more advantageously avail itself of the development of air transportation than could the fifty or sixty millions of people of Szechuan who have all these centuries been economically imprisoned in central Asia. We may look upon the road construction work which is now developing in the Szechuan Province as a forerunner of big developments in modern transportation generally. Furthermore, the spirit which animates the peoples of this remote Province to improve their economic conditions is typical of that which at present characterizes much of China. A reasonable degree of political stability is now the one great essential to that country's embarkation upon a vast program of modernization.

British Trade and Industry

(Continued from page 447).

Alternative Remedies

The belief that there will be no tariff gains support from the fact that the Government has devised other measures for meeting the situation. In previous notes reference has been made to the Government's scheme for relieving the heavy industries of their main burden of local rates. The Government has now announced that this scheme is to be supplemented. There will be a further conditional derating of freight-carrying railways, the relief to be concentrated on coal for export, foreign bunkers and for blast furnaces. This will become operative from 1st December, 1928, the estimated cost to the Government being £5,000,000. In his speech outlining this scheme the Prime Minister referred to the rationalization that has already taken place in the heavy industries. Undoubtedly a certain measure of rationalization has taken place, but no qualified observer would dare to say that it has gone far enough. Indeed, one of the chief criticisms against the heavy industries is that they are not, in the main, over-enterprising and over-adaptable.

A word may be added on the report of the Industrial Transference Board. On the whole, this tells us what we already know. It puts the number of surplus miners—this is, those who are permanently unemployable—at 200,000, and suggests among other things, emigration and industrial migration as remedies. Meanwhile the heavy industries are suffering from normal seasonal slackness; great activity is not usual in the summer months. The announcement of the Government's scheme, however, has had a somewhat heartening effect and it will be interesting to observe when the autumn comes—and still more when the scheme becomes operative—what effect it will have on the volume of business.

Government Ownership in the Philippines

By H. F. Wilkins

AN unusual situation attaches itself to the ownership and operation of railways in the Philippine Islands. There are two systems, one of them known as the Manila Railroad Company, with a history that goes back to Spanish days, and the other a privately owned corporation established in 1907, called the Philippine Railway Company. Since 1917 the Manila Railroad Company has been owned by the Insular Government of the Philippines.

The two lines are non-competing. The government-owned system is confined to the island of Luzon, largest and northernmost of the Philippine group and the island on which the city of Manila is located. The privately owned lines are on the islands of Panay and Cebu in the central portion of the archipelago, where most of the sugar comes from.

R. R. Hancock is president of the Manila Railroad Company and at the same time vice-president and general manager of the Philippine Railway Company.

The unusual thing is this: that while one line is government owned and the other privately owned, the former is operating at a profit and the privately owned line is showing yearly losses. But actually there is more government supervision on the privately owned system than on the Manila Railroad Company's system, according to Mr. Hancock.

This is because the Insular Government, through a legislative act, agrees to guarantee interest on the bonded indebtedness of the Philippine Railway Company. Consequently they keep a close check through government bureaus on operation and expansion. No demand for equipment can be satisfied without authority from the government. Rates are fixed by a board of control called the Public Service Commission.

Yet there is another side to the picture. Losses of the Philippine Railway Company can hardly be laid to government super-

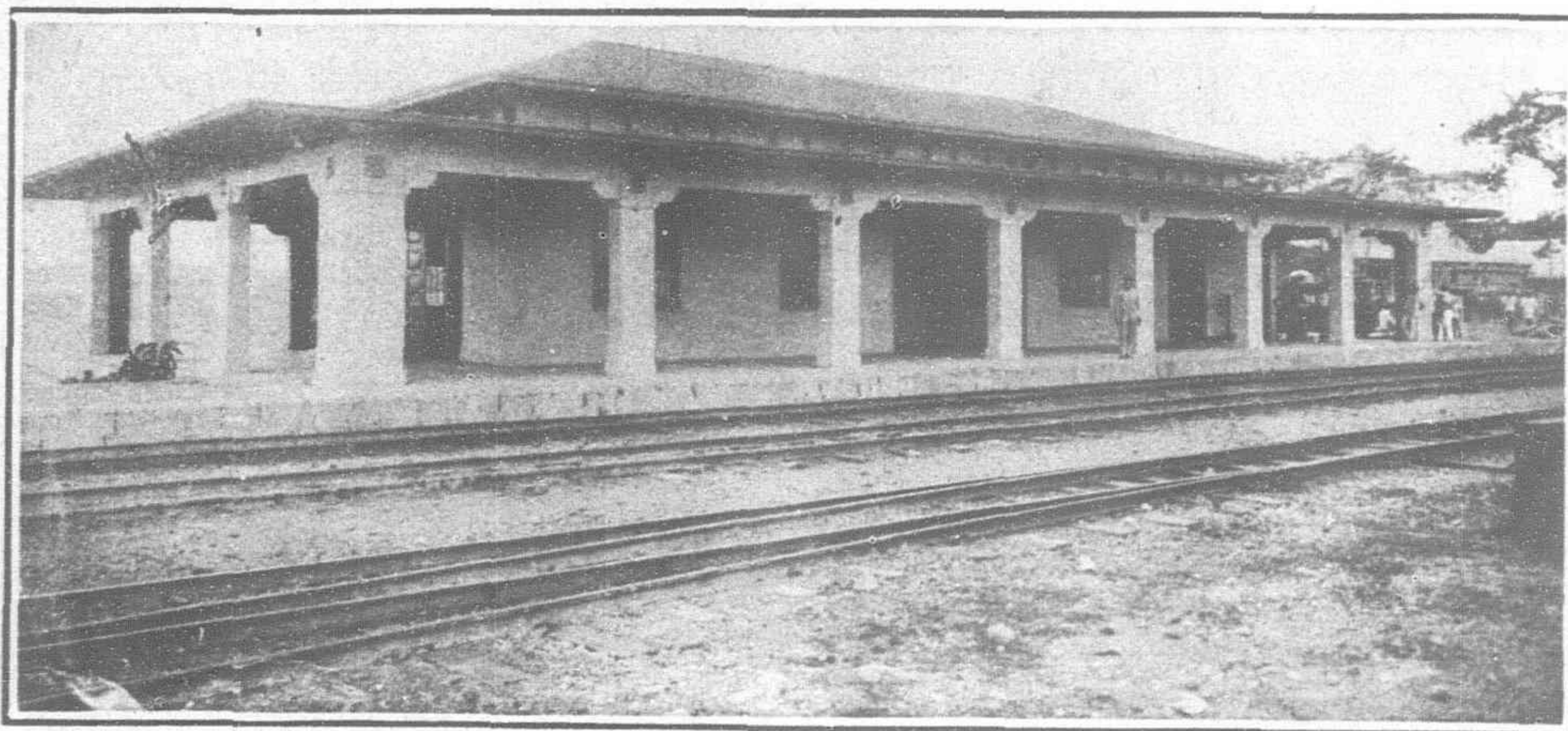
vision. The situation is such in Panay and Cebu that no railroad could make a profit at present. There is not enough traffic now, and there won't be enough until they build more sugar centrals and get more capital in there. The sugar centrals are going to be built and the capital is coming in.

The most exasperating difficulty is bus competition, which is particularly fierce around Iloilo, headquarters of the Philippine Railway Company, and the port of Cebu. There is no railroad competition, but the system is paralleled by fine highways. Bus operators take advantage of this to the fullest extent. The bus business is not well organized, but it is highly developed. Most of the bus routes are short-haul affairs, paralleling the railroads in many cases, often run by drivers who own their own cars and owe no allegiance to any company—free lance operators.

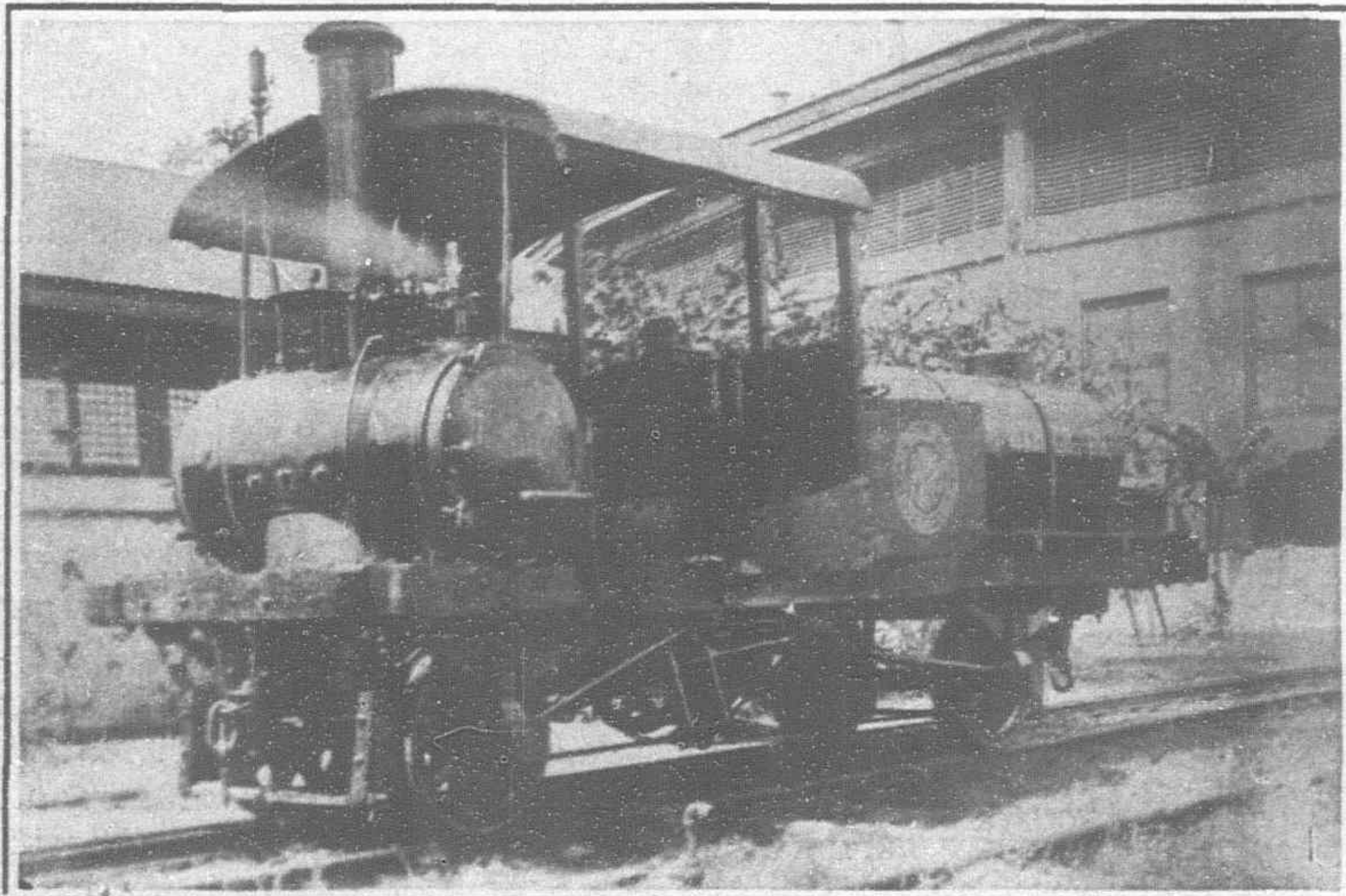
Railroad passenger rates on these lines are down to less than a cent a mile, which is cheap transportation. Bus rates are about the same. The type of passenger traffic that uses transportation is of the kind that likes to be set down at its front door, or dropped off at the market on the way home, catered to in hundreds of little ways that make bus riding more popular than train riding.

Returns in the freight business tell a different story. While passenger fares netted the company less in 1926 than in 1919, freight revenue amounted to a good deal more, and the growth has been steady up to 1925. In 1926 even this took a little slump.

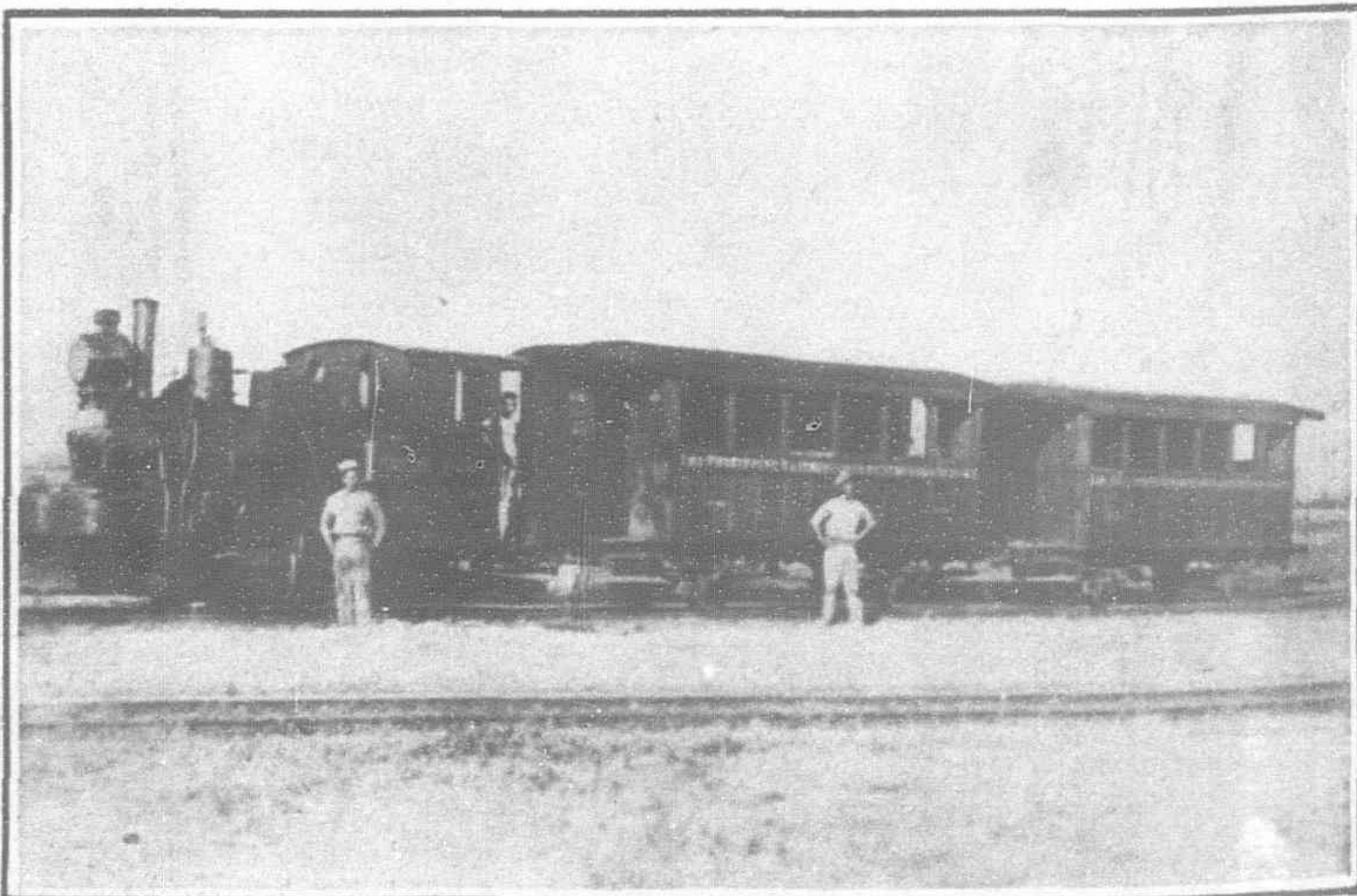
The latest annual report of the Philippine Railway Company to the board of directors in New York City showed total operating revenues for 1926 amounting to \$666,643.08, as compared with \$746,742.27 for the year 1925, a decrease of \$300,004.40. The operating expenses were cut down in that period too, cut from \$541,213 in 1925 to \$511,208. It was bus competition that did the dirty work.



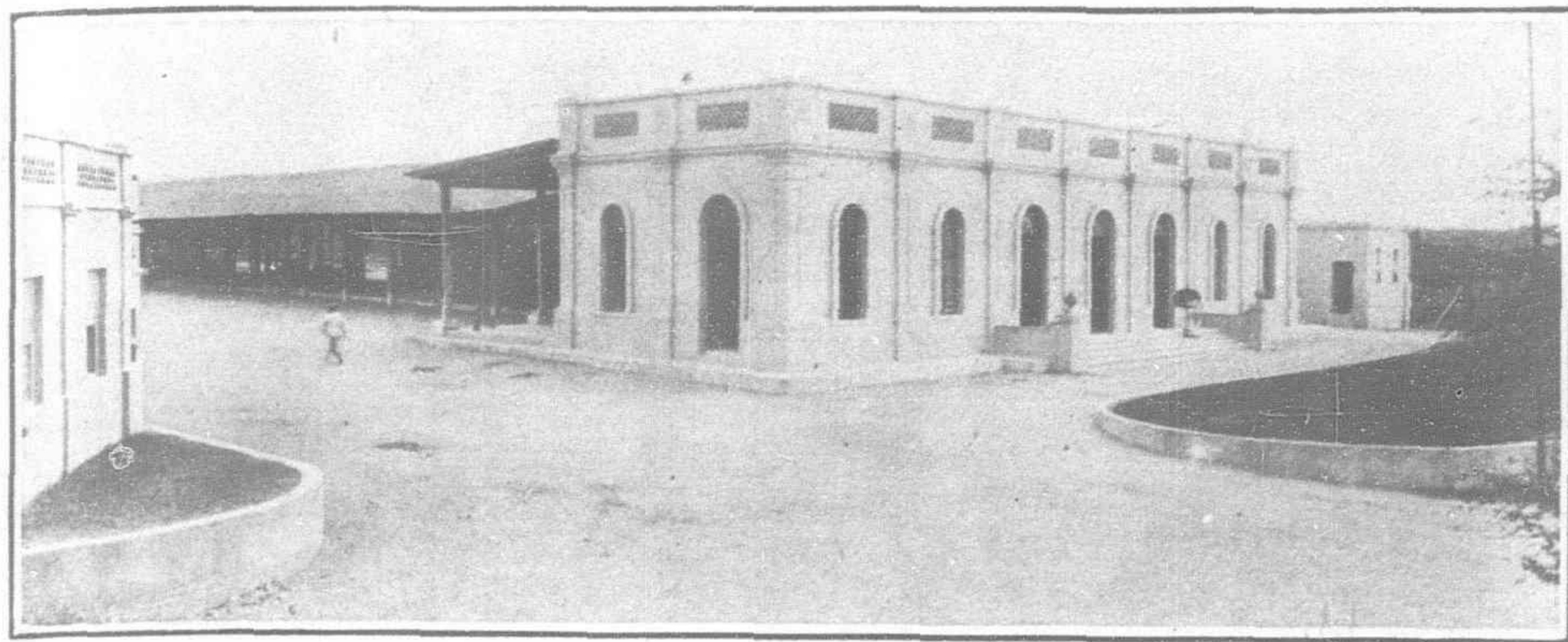
Station at Cabanatuan.—This is the Approved New Type of Station Built by the Manila Railroad Company



A Hybrid Locomotive.—An Old Steam Automobile Built Into a Logging Locomotive at Railway Shops in Iloilo, P. I.



Travel Luxury in the Philippines.—This Suburban Train Found on the Island of Panay is Obsolete, However. Modern Equipment is in General Use



New Station at Dagupan.—A Little More Elaborate Than the Standard Type of Station in the Philippine Islands

Loss in freight revenues for the year was owing to partial failure of the sugar crop in that year on the island of Panay. Revenues from transporting sugar and cane were \$35,000 less than the previous year. This year the outlook is different, and the next annual report is expected to show a much rosier outlook.

But for 1926, the freight revenues for the first time in the history of the road exceeded the passenger revenues. In the early years of operation passenger earnings amounted to 70 or 80 per cent. of the total. The following comparison of passenger and freight revenues year by year from 1917 to 1926 gives a picture of the development of the Philippine Railway Company in that period:

Passenger revenues in 1917 were \$258,114; in 1918 they were \$302,473.41. For these two years freight revenues amounted to \$125,389.13 and \$146,864.00. In 1919 freight revenues were \$179,097. Passenger revenues were \$348,688.11. Freight revenues went up to \$196,480.45 in 1920, and passenger revenues increased to \$464,237.44 that year. In 1921, passenger revenues took the first big drop. They went from the previous year's high point down to \$417,793.48. Freight revenues went up again, reaching \$200,305.49.

Nineteen twenty-two saw further drop in the passenger income, down to \$363,431.64, while freight receipts went up to \$220,066.77; they dropped a little the following year though, down to \$219,617.31. Passengers spent \$339,054.13 in 1923. Both sources of income took an upward jump in 1924. Passenger revenues amounted to \$371,022.60, and freight receipts, \$290,107.16. Freight revenues showed their biggest increase in 1925, when they went up to \$333,393.56. Passenger income was \$349,116.87 that year.

The 1926 figures are \$304,756.02 for passenger revenue and \$310,041.78 for freight.

Vice-president Hancock suggested in the annual report in which these figures appeared that track automobiles might be tried to advantage in competing with buses on Philippine highways.

"Passenger revenue has been showing a steady decline for several years," he said. "Splendid highways run parallel to our lines and traverse the most populous sections on both Cebu and Panay. The rates charged are very low. We are now hauling passengers on Cebu for about one cent a mile, but even this rate does not attract a large proportion of the total passenger travel. It is believed that a more frequent service with track automobiles might increase our passenger revenues, and be operated for less than steam locomotives. We

will always be at a serious disadvantage, however, due to the cost of road auto operation, which is very low, and the fact that the highways run through the towns and road autos stop wherever the passengers care to disembark."

As a matter of fact, track automobiles have been tried on the iron highways of the Philippine Railway Company with promising success, since that report was made, and that is one of the interesting features of recent development. A one-ton White truck was made over into a track locomotive hauling two trailers, the whole train having a capacity of about 100 passengers. This is plying the Capiz-Panay line, at its northern terminal. Operation is found cheap and efficient, and these outfits can stop anywhere along the line to let out passengers without interfering with a fairly fast schedule.

Recent action of the Insular government in authorizing more than \$2,000,000 worth of bonds for port and harbor improvements in Cebu and Iloilo is having a greatly beneficial effect on prospects of the Philippine Railway Company, particularly the development in Cebu, where there is a big cement plant. Port works there will enable ships to load and unload directly to and from box cars and flat cars on spur tracks at the wharves.

So it goes with the privately owned corporation. The Manila Railroad Company, government owned, is not without its operating problems, but it is located in a much more profitable territory. The island of Luzon, being the largest in the group, has more territory in it that cannot be reached by convenient water transportation, for one thing, and for another the Manila Railroad Company has been established much longer than the Philippine concern.

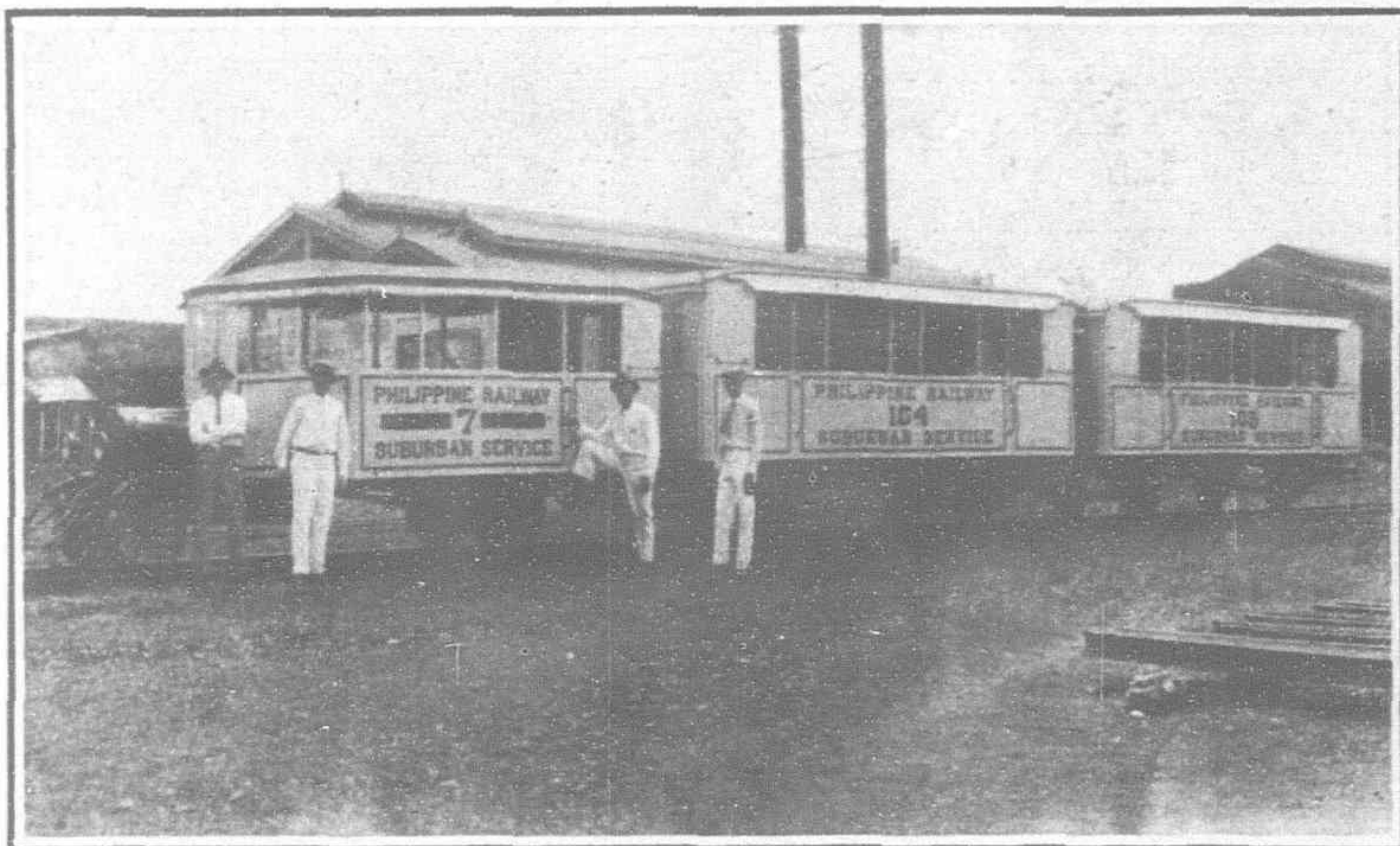
Bus lines are active in Luzon, but here the government has stepped in and started to operate its own buses over picturesque mountain trails, so that not all the competition with railroads is a loss to the operator.

Passenger income on the Manila company's lines for 1926 was 5,590,190 pesos, or half that in United States dollars. Freight income amounted to 5,698,196 pesos. This was an increase of 117,862 pesos in

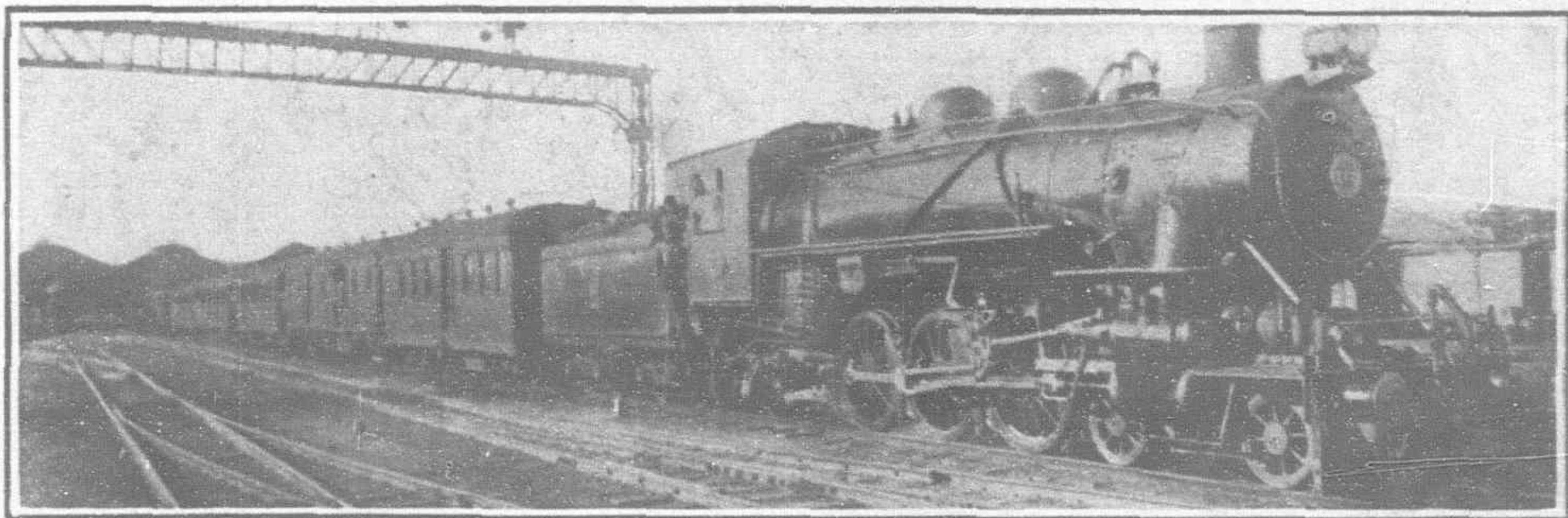
passenger revenues over the preceding year and a decrease of 205,138 pesos from the preceding year's freight revenues.

Considerable reductions were made during the year 1926 both in freight and passenger rates, and this was the chief factor in reduction of net income for the year. Actually the volume of passenger and freight traffic showed an increase. The reduction was in order to meet bus competition in passenger traffic and shipping competition in freight traffic.

From July to November, 1926, freight rates on several commodities were materially reduced. Cost of shipping copra, hemp



Track Automobiles in the Tropics.—White Motors With Two Trailers, Total Capacity 100 Passengers



The Baguio Express.—A Big Baldwin Pacific Hauls Modern Coaches to the Summer Resort of the Islands, Baguio

and maguey from Luzon's east coast to Hondagua and to Manila terminal were materially lowered to meet water competition; rates on hemp and copra from Legaspi to Manila were reduced; so were rates on logs for manufacturing out of the Aloneros-Hondagua district; rates on palay, or threshed rice, and also other rice products were lowered to points north of Aloneros; rates on rail shipments of almost every inland commodity were similarly lowered. It made it fine for the shippers but bad for the railroad. The present is recognized locally however as a period of necessary adjustment.

There are just under 660 miles of rail lines owned by the Manila Railroad Company. Of this mileage, 121.4 miles was built in the time of Spanish occupation, before the Americans came on the scene. A total of 476 miles was built during American occupation up to the time the government took over the lines in 1917, and the rest has been constructed since then.

Railroad construction on the island of Luzon dates back to 1875, when the Spanish government issued a royal order to prepare a general plan for railroads on the island. Early rail construction in the Philippines has in it some of the same kind of romance encountered by builders of the famous U. P. trail with the added glamor of tropical settings, added dangers from malarial swamps and intrigue added by a war of conquest and following insurrections.

The Manila Railway Company, Ltd., was originally an English concern operating under a Spanish grant. The chief figure in early railroad days of the Philippines is Horce L. Higgins, first president of the line and really its builder. He is now understood to be in London. He came in as a young inspecting engineer and remained as the guiding and controlling factor up to 1917.

They tell some amusing stories of early railroading days in the Philippines. Equipment was of British manufacture and rather primitive. Locomotives and coaches of the early days had all the dignity of a Toonerville trolley. They traveled slowly because it was a generally accepted idea that a Filipino thought he was not getting his money's worth if he arrived too quickly. Dust was used for ballast to prevent serious consequences when the engine went off the track.

Austin Craig, former professor of history in the University of the Philippines tells an amusing incident encountered in a ride to Dagupan from Manila in the early days. The engineer saw a carabao and a calf standing on the track so he stopped the train. The carabao was bigger than the engine and he was afraid of the consequences if he bumped her. The carabao stalked off after a few minutes and left the calf standing there. That was all right. The calf could be negotiated. All steam was put on with intentions of hitting it so hard that the jar wouldn't be noticed.

But unfortunately the mother carabao came back on the track. The locomotive struck her amidships and promptly stood on its nose, cab in the air. The four-wheel coaches turned at right angles like dominoes on edge.

Present day equipment is quite modern. The Philippine Railway Company has American locomotives, coaches and freight cars. Some equipment on the Manila Railroad Company's lines is continental in design, but it is being replaced with American products. When the Insular government took control in 1917 the 216 passenger coaches in operation included 52 small four-wheel cars which have now been replaced with 37 modern 12-wheel coaches with a seating capacity of 156 passengers each.

Likewise about 118 seven-ton four-wheel box cars were scrapped and 386 cars of 30 tons capacity were brought in. At the time of purchase by the government there were 116 locomotives in the service. Ten of these have been retired as obsolete and 10 Baldevit. Santa Fe locomotives of 31,500 pounds tractive power were bought.

In specifying additional motive power for the heavy train lines in the northern part of Luzon, Baldwin Pacifics of the three cylinder type were decided on, and six of these were added to the equipment. New rolling stock acquired since 1917 has cost the company more than 6,625,000 pesos.

According to José Paéz, general manager of the Manila Railroad Company, the practise which has been followed by the government in the Philippines in operating and managing the Manila Railroad Company since its acquisition in 1917 is in line with the modern tendency towards the separation of the actual management from ownership in government owned railroads.

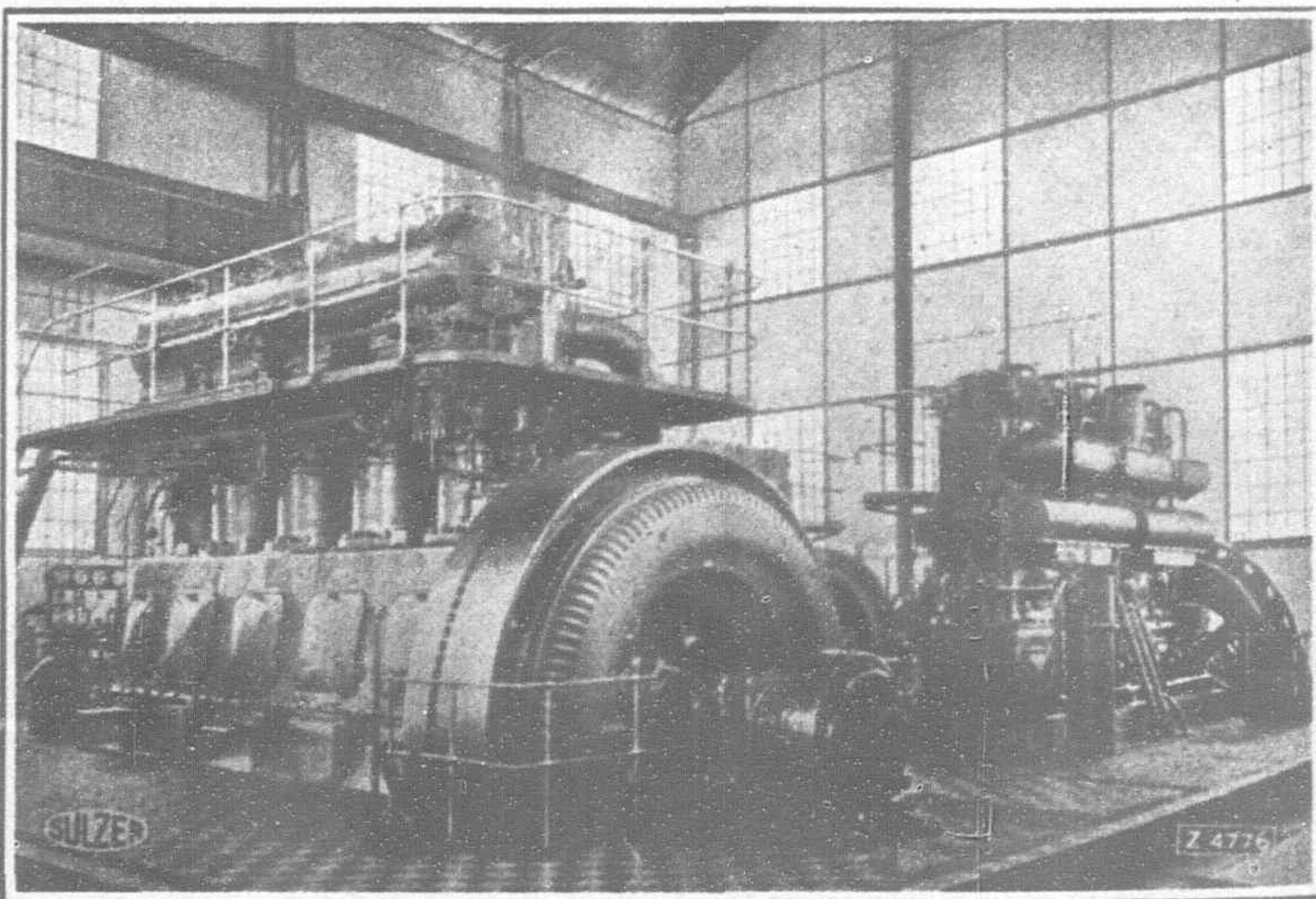
In the years between 1921 and 1924, government owned rail lines in Canada, Germany, Austria and Czecho-Slovakia were reorganized in such a way that their operation and management was turned over to a managing board composed of representative professionals and businessmen while the government retained ownership through a holding corporation. These government owned railroads, in theory at least, are no longer a direct organization of the state but are quite a separate enterprise operated and managed like any other privately owned railroad.

"The situation is virtually the same with the Manila Railroad Company," says Paéz. "Since the government took control the road has been operated as a private corporation governed by a board of directors who up to 1926 were being elected by a committee composed of the governor-general, the president of the Philippine senate and the speaker of the house. In 1927, however, members of the board of directors were elected by the governor-general alone."

Such is the manner of government ownership in the Philippines. In combination with a directly contrasted privately owned line in contiguous territory, it offers an interesting commentary on railroad operation in the tropics.

Diesel Engine Power Station, Cheribon, Java

The Nederlandsch-Indische Gas-Maatschappij, Rotterdam, a company which, in addition to a number of gasworks, owns several electric power stations in the Dutch East Indies, received a concession from the Dutch East Indian Government to instal and work an electric power station at Cheribon, a community on the north coast of Java. The power station is about 330 yards from the sea. The order for the first Diesel engine installed in the power station, an engine running at 214 revs. per min. and developing 750 B. H. P. under tropical conditions, was passed to the representatives of Sulzer Brothers in the Dutch East Indies, the



Diesel Engine Power Station of the Nederlandsch-Indische Gas-Maatschappij, Cheribon. Three Sulzer Diesel Engines, One of 750 B.H.P. and Two of 500 B.H.P.

Amsterdamsch Kantoor voor Indische Zaken, Amsterdam. The engine is coupled to a 6,000-volt flywheel generator and was put in service at the beginning of 1925. In the same year the Ned. Ind. Gas-Mij. decided to increase the output of the power station by installing two Sulzer Diesel engines, each developing 500 B. H. P. at 250 revs. per min. under tropical conditions. The new engines were put in service in 1926. This type of engine was chosen by the directors of the company because of its simplicity, both as regards design and the attendance required. In above photograph the two new engines can be seen in the background and the 750-B. H. P. engine in the foreground.

The St. James Power Station in Singapore

THE first supply of electricity to the city was provided by the Municipal Commissioners in 1905. A Low Tension D.C. bulk supply was taken from the Singapore Electric Tramways Company's Generating Station in Mackenzie Road by underground feeders to a Substation equipped with balancers in Coleman Street, current from there being distributed by a three-wire direct current network.

In 1912 it became evident that the supply from this source was quite inadequate to the needs of the city and that the D.C. system for the residential areas was out of the question, and the Singapore Electric Tramways, Ltd., were approached as to whether they would instal additional plant. They agreed to put in two Diesel Oil Engines and one motor generator for this purpose and give a supply at 3,000 volts. This plant was installed but owing to financial reasons, the scheme for extensions to the Suburban area was held in abeyance. A map shows the area of supply at this period. Owing to the advent of the Great War nothing more was done in this direction until in 1919 a L.T.A.C. supply was given to Mt. Sophia district and in 1921 an E.H.T. ring main was laid and energized and Low Tension A.C. current was delivered from four Substations situated in Killiney Road, Chatsworth Road, Dalvey Road and Newton Road.

However at this time the Tramways Co. were unable to instal more plant at their Generating Station for financial reasons, and as the whole of their existing plant was fully loaded it became necessary to review the whole position. The matter in 1921 was brought to the notice of Government who instructed a Committee to draw up a report and submit recommendations.

The recommendations of the Commission involved the construction of a new Power Station by the Municipal Commissioners, extension to the existing D.C. and A.C. networks and an extended system of E.H.T. Mains and Substations for the distribution of Alternating Current for lighting and power.

In October, 1923, the Municipal Commissioners instructed Messrs. Preece, Cardew and Rider to choose a site, advise and prepare plans and specification for a Power Station.

In November, 1923, Mr. A. H. Preece (senior partner in this firm of Consulting Engineers) came out to Singapore to select a site and discuss various matters with the Municipal Commissioners and their Engineers.

After carefully considering a number of possible sites for the Power Station, Cape St. James was selected as being the most suitable for the purpose in view.

In order to meet the public demands and at the same time build up the load for the proposed Power Station an agreement was entered into in June, 1924, with the Singapore Harbor Board for a bulk supply of E.H.T. Alternating Current at their generating Station at Keppel Harbor.

The agreement provided for a maximum load of 2,000 k.w. and with this additional load available it was hoped to meet all the demands of the public until the new Generating Station could be put into operation. Orders were immediately placed for E.H.T. Switchgear and two 1,500 k.v.a. step up Transformers for the equipment of a main Substation adjoining the Board's Power Station and for cables and substation equipment for the distribution system.

Plans and specification were then prepared for the buildings and plant for the new Power Station and the site was acquired from Government.

The accompanying map (Appendix 3) shews the area of supply in the city of Singapore before this decision was arrived at.

Supply from the Harbor Board's Power Station was commenced on July 8, 1924, and supply disconnected from the Tramways Co., by July 27, 1924.

However the load had increased to such an extent that the 2,000 k.w. as agreed to with the Singapore Harbor Board was almost reached on the first night and the Municipal Commissioners asked the Tramways Co. to continue the supply which they agreed to do until St. James was able to generate.

The completion date for the station was arranged for March, 1927. But in view of the position an effort was made to bring the first unit into operation as early as possible and on September 30, 1926, the first of the generators was put into commission thereby relieving the situation. (The load had grown to such an extent that restriction of supply during the peak load had to be enforced in June, 1926).

A few days later the Municipal Commissioners discontinued taking any Electrical Energy from the Singapore Traction Co.

St. James Power Station started generating for the whole of the existing system on June 1, 1927, and the agreement with the Singapore Harbor Board was terminated on the 30th of the same month.

Owing to the rapid growth of the demand which is bound to

arise when the reduction of the charges for electrical energy has taken effect the Municipal Commissioners in June 27 authorized an extension of plant by the addition of one 10,000 k.w. turbo-alternator, etc. and the Consulting Engineers have been instructed to call for tenders with as little delay as possible.

St. James Power Station

The site at St. James is almost an ideal one for a large

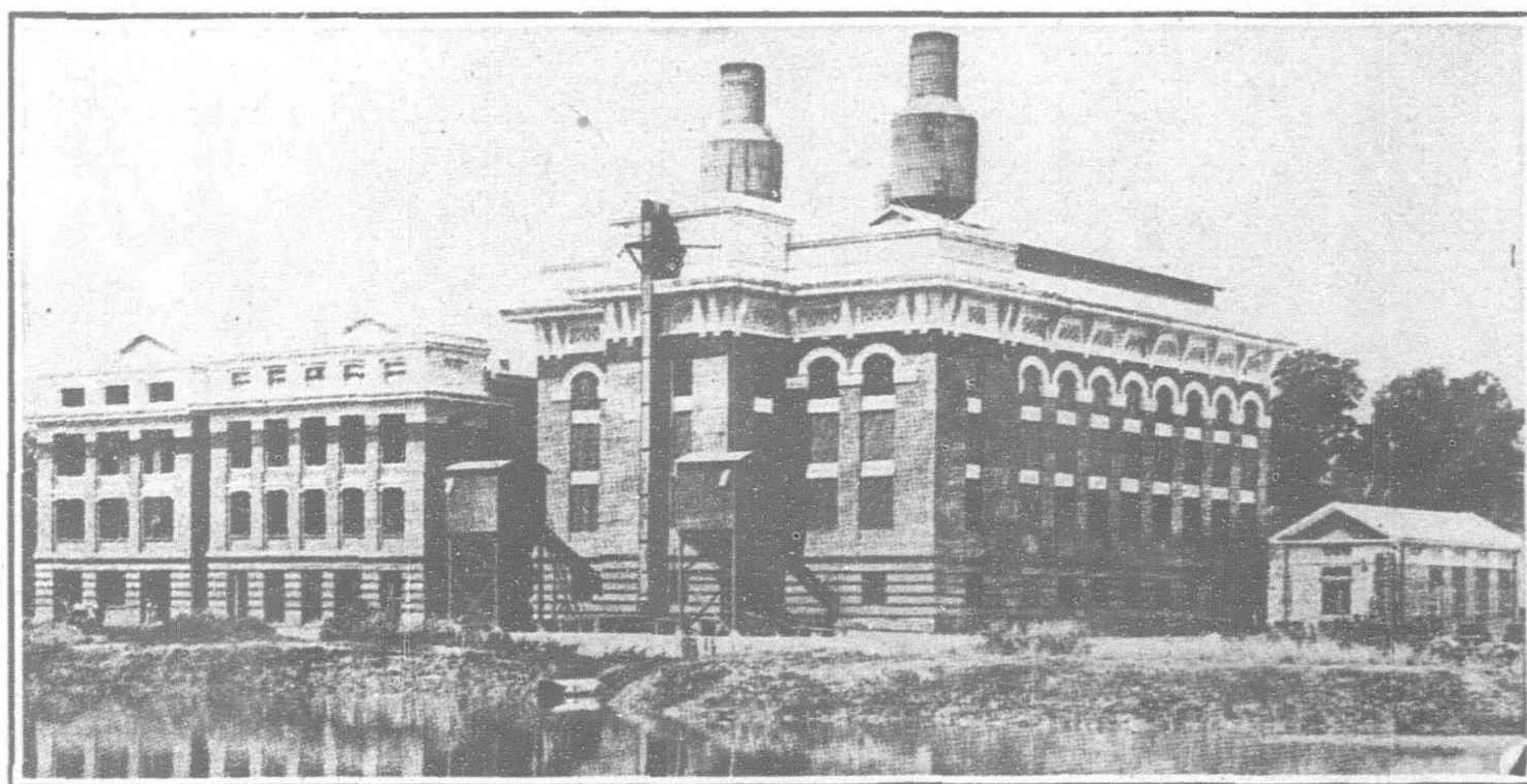
Power Station, and the only drawback was the necessity of driving piles in the filled portion on the West side. The site chosen originally by the Consulting Engineers was on the East side of the peninsula which was composed of practically solid rock but Government would only offer the portion to the Municipality thereby increasing the cost of erection by a considerable amount.

The site has an area of about 5 acres. The close proximity of the area gives special value to the site from a Power Station point of view, as an unlimited quantity of water for condensing purposes is available; also sea borne coal can be delivered within a few yards of the station.

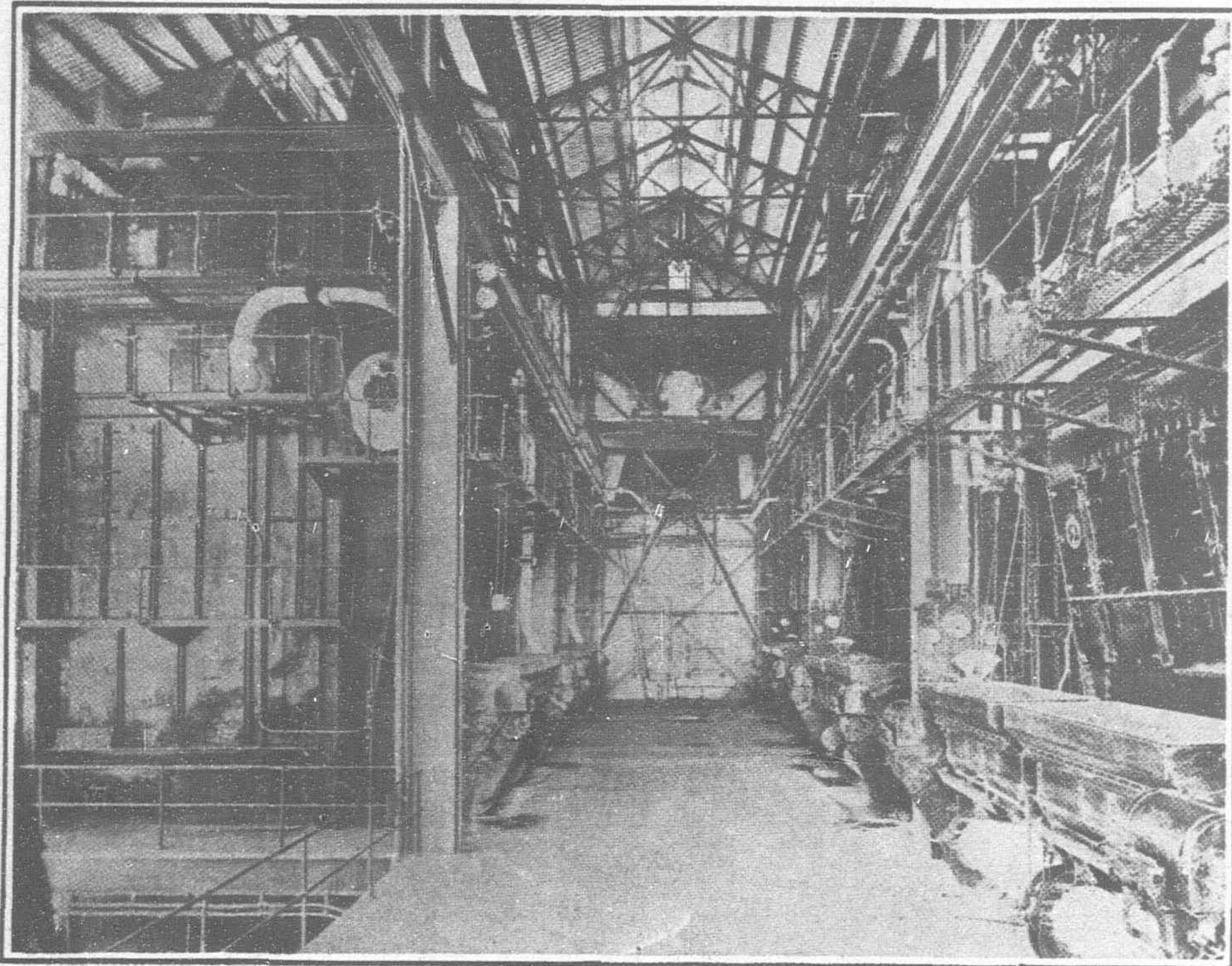
A connection with the F.M.S. Railways also provides for the delivery of locally mined coal and for the transport of materials and plant.

The general lay-out of the station will be seen from the accompanying plans. The building comprising boiler house, pump room, turbine room, control room and switch house is arranged with the permanent end almost facing due West. The boiler house, turbine room, switch house all lie parallel with the Straits separating Singapore and Pulau Brani. The temporary end of the building is closed by a temporary steel framework covered with asbestos corrugated sheeting; all extensions to the building will be made from this end.

The building is a steel framed structure supported on reinforced concrete piles with run beams and designed for a wind pressure



St. James Power Station



St. James Power Station: Battery of Six Babcock and Wilcox Boilers, Equipped With Chain Grate Stokers

of 50 lbs. per sq. foot. The walls are of pointed brickwork and the floors are reinforced on concrete slabs supported on steel joists.

The roof immediately over the E.H.T. oil switch room is of fire proof construction and all other roofs are of steel covered with asbestos corrugated sheeting. Steel windows and louvres are provided throughout for light and ventilation.

The interior of the Turbine Room and Low Tension Switch Room is lined with glazed tiles up to a level of about 15 feet above the floor line.

The space set apart for coal storage is capable of accommodating 4,000 tons in heaps of moderate size and height. Narrow gauge trucks run between the coal heaps and along the quay wall to the coal elevator. Coal is loaded into tipping trucks at the heaps and taken to the receiving hopper of the coal elevator by manual labor.

A quay wall has been constructed extending from the sea to the boiler house which will accommodate six fifty-ton lighters.

The trucks of coal are run over a weighbridge which automatically registers the weight of coal in each truck; the coal is then tipped into a hopper and raised by means of a bucket elevator to two overhead bunkers at the permanent end of the boiler house.

The boiler plant is designed to burn low grade fuel and as this class of coal is practically all slack no crushing plant has been installed. It may become necessary for various reasons later on to burn a higher grade fuel when a coal crushing plant will have to be installed.

The boiler house which is 120 feet long by 88 feet wide is designed for two rows of four boilers with a central firing gangway. Six boilers have been erected in the first instance. Each boiler will evaporate at a normal working load 40,000 lbs. of water per hour at a pressure of 250 lbs. per sq. in. superheated to a temperature of 650° Fah. Each boiler is provided with two mechanical stokers of the chain grate type, integral superheaters and superimposed economisers. Coal meters are fitted to each grate.

The gases from each boiler after they leave the economiser pass through a short uptake flue to a steel chimney. One chimney is provided for each pair of boilers. Dust and grit extractors

of the cyclone type are incorporated in each chimney and the grit and dust extracted from the flue gases is taken down to the basement by pipes.

Each chimney is 8 feet in diameter, the tops of the chimneys are 96 feet from the firing floor level and 108 feet from the ground floor.

The boiler furnaces are worked on the balanced draught system with atmospheric pressure above the fire. A separate forced draught fan in the basement delivers the air under pressure into compartments below the grates of each boiler and a separate induced draught fan between the economizer and chimney draws the gases from the combustion chamber and discharges them up the chimney. All the fans on each boiler are controlled from the firing floor.

A system of dust and soot removing plant has been provided. Steam jet blowers are used for the boiler, superheater and economizer tubes.

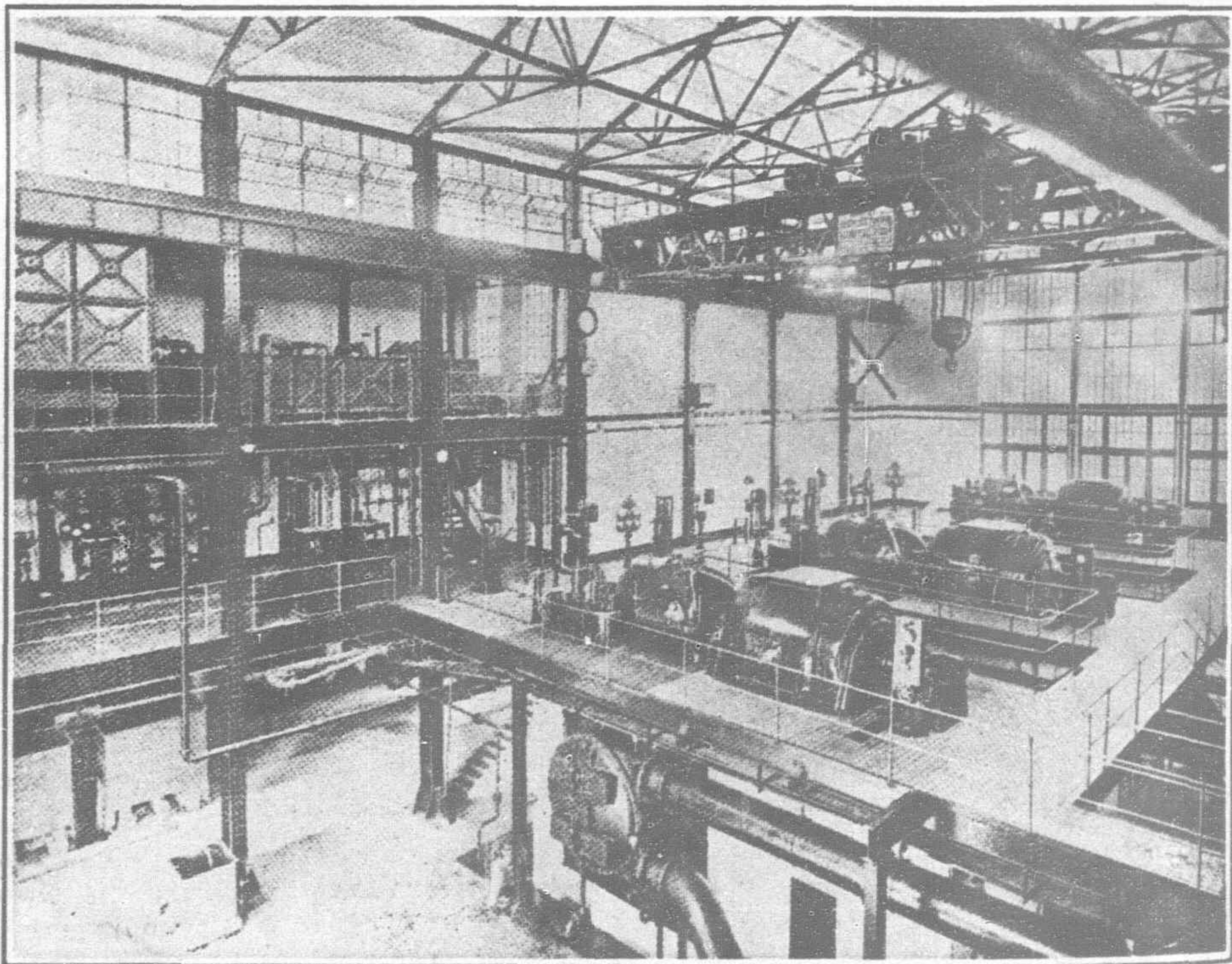
The ashes are received in hoppers at the back of the grater and fall directly through sealed chutes into a water trough conveyor for each line of boilers. The conveyor lifts the ashes to external hoppers from which they can be removed either by lorries, carts, or railway wagons.

At 31 feet above the firing floor there is arranged along the center bay of the boiler house, an electrically propelled coal lorry which traverses the runway which extends the whole length of the boiler house from below the coal bunkers.

Coal is discharged from the bunkers into the lorry and is delivered to the boiler hoppers as required. The capacity of the lorry is 10 tons and can be operated either from a cage or by hand from the firing floor.

Oil Burning Equipment

Oil burners have been installed on all boilers with the necessary pumps and heaters for delivering the oil under pressure and at the correct temperature for combustion in the boiler furnaces. These pumps and heaters are installed in the pump room. The pressure system has been adopted, the oil being atomized by centrifugal force, produced by the rotation of heated oil under pressure. The



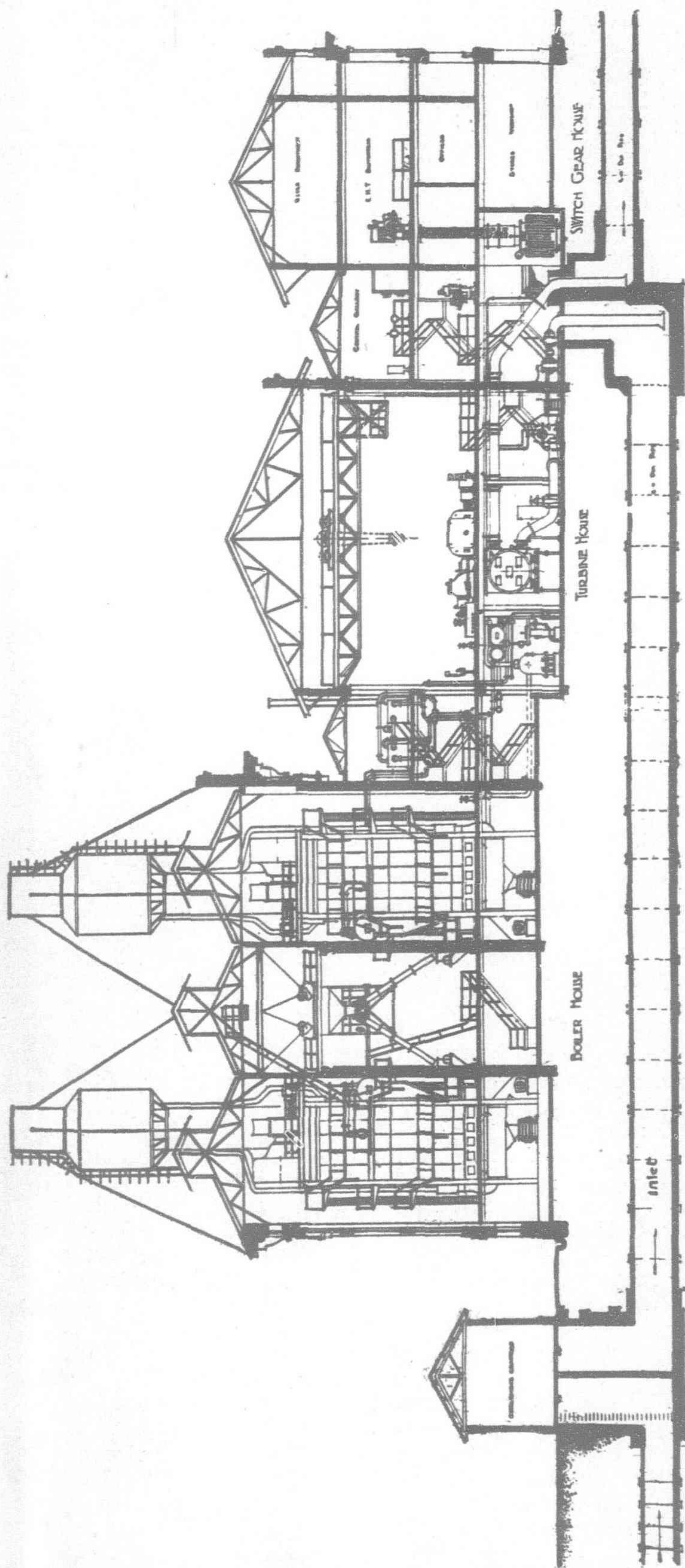
St. James Power Station: Turbine Room Equipped With Three Metro Vick Turbo-alternators. Two Each of 5,000 K. W. (6,250 K. V. A.) One of 2,000 K. W, 12,500 K. V. A. and One Auxiliary 120 K. W. *

air necessary for efficient combustion is supplied from branch air ducts connected to the main air ducts from the forced draught fans. Regulating dampers are provided for controlling the supply of air to each burner.

The burners are arranged in the back casings of the boilers six burners to each boiler.

The service oil tank has a capacity of 50 tons and is arranged outside the temporary end of the pump room at hot well floor level.

The service tank is supplied at present by a 4-in. pipe terminating at the quay wall and oil is brought in barges to the quay wall and pumped from there to the service tank. At some future date a storage tank will be installed away from the building and the oil pumped from there direct to the service tank.



The boiler feed water plant is located in the pump room between the boiler house and turbine room. Two turbine driven feed pumps have been erected each having a capacity of 150,000 lbs. of water per hour against full boiler pressure. Duplicate feed pipes run down each side of the boiler house with connections to the various economizers and boilers.

Every precaution has been taken to prevent the access of air to the feed water system. Two covered hot well tanks and one covered storage tank are erected on the hot well floor above the pump room. The condensate from the turbines after passing through heaters is pumped at a temperature of about 180° Fah., into the closed hot well tanks from which the feed pumps are supplied.

The make up water is taken into the storage tanks supplied from the town mains and from there to the hot well tanks through submerged pipes. The supply is controlled by ball valves.

The exhaust steam from the boiler feed pump is led direct into the hot well tanks.

The overflow pipes from the storage and hot well tanks are not led directly to atmosphere but are first sealed in subsidiary tanks situated in the pump room the overflow from which goes into the drainage system.

What would normally be the air spaces between the levels of the water in the closed hot well tanks and the covers of the tanks is kept filled with steam at a low pressure by a branch from the exhaust pipes of the feed pumps.

Small vent pipes are taken from the covers of the hot well to over tun dishes near the feed pumps and by means of valves on the exhaust branch steam can be regulated so as to be just visible.

This will prevent the inlet of any air to the hot well tanks whatever the level of the water.

The boilers and economizers are emptied or blown down into a large steel tank with a 12-in. atmospheric pipe to relieve all pressure. The drain from the blow down tank is arranged so that the tank is always about half full of water.

The feed pump and other drain piping connected to the tank is taken by internal pipes below the level of the water which provides a seal and prevents egress of steam from the open tun dishes into the building when a boiler is being blown down.

The present turbine room is 120 feet long by 59 feet wide. It contains three main turbo-alternators two each of 5,000 k.w. capacity (6,250 k.v.a.) one of 2,000 k.w. (2,500 k.v.a.) at a speed of 3,000 revolutions per minute and one auxiliary geared turbo-alternator 120 k.w. capacity (150 k.v.a.) at a speed of 4,000 revolutions per minute driving the alternator at 1,500 revolutions per minute.

The main alternators generate 3 phase current at 6,600 volts between phases and 50 cycles per second.

Surface condensers are provided for the main turbines with air pumps of the steam ejector type and water extraction pumps driven by electric motors.

The condensing plant is designed for a vacuum of 26.75 with the barometer at 30 inches.

Feed water heaters using the steam from the secondary stages of the air pumps are arranged in the condensate line from each condenser.

A closed system of air ventilation is used with each alternator with main tube coolers supplied from the main circulating water system.

The main turbo-alternators are erected on separate monolith concrete foundations rising 17 feet above the basement floor level.

The auxiliary turbo-alternator delivers 3 phase Alternating Current at 400 volts between phases.

A 30 ton electrically driven traveling crane is provided in the Turbine Room which is controlled from a cage.

Pipework

The whole of the steam pipes are of steel with flanges screwed on and expanded for pipes up to 4-in. diameter. All pipes over 4-in. have flanges rivetted.

The pipes have a continuous fall from the boiler stop valves to a main bus range run below the boiler room firing floor and from this to large separators in the turbine room basement mounted on steel balls supporting by flanges on adjustable springs; the pipes from the separators rise to the turbine stop valves.

The separators and steam ranges, main and auxiliary are

drained by float traps; the discharge from the traps being taken to the hot wells.

The atmospheric exhaust branches of each turbine are connected through automatic valves to the atmospheric main which is carried outside and above the roof of the turbine room.

The bearings of the turbines are lubricated under pressure by gear driven pumps on each machine. The oil is pumped from tanks formed in the bedplates of each turbine through the oil coolers to the bearings. Emergency steam turbine and hand pumps are fitted to each machine. The cooling water is taken from the main circulating water system. Connections from the town mains are provided in case of emergency.

An oil filter is installed on the basement connected by pipes to the tanks on the turbine bedplates. The filtered oil is returned to the turbines by a small electrically driven pump.

The condensing water intake works are situated on the South side of St. James. The water flows through two concrete culverts each 5-ft. 9-in. in diameter to the screening chamber and from there through a short length of 8-ft. 0-in. diameter culvert to the intake channel inside the Station. From there the water is pumped through the condensers to the outlet channel which discharges through a 6 feet diameter culvert into Telok Blanga Bay on the East side of St. James.

The intake culverts are controlled by penstocks in the screening chamber, provision has been made for sealing either of the culverts at the sea end for the purpose of cleaning and inspection. Vertical bar screens are used where the inlet channels connect with the sea.

The screens are of the continuously moving band type and erected in the screening chamber. Two screens are provided at present. Provision is made for extensions to this plant.

The screening chamber is equipped with duplicate pumps for supplying water for cleaning the screens.

The debris which is washed from the screens is dealt with by the main drainage system.

Separate motor driven centrifugal pumps are used for each condenser with independent pipe lines, the pumps for the 5,000 k.w. machines are each capable of delivering 8,070 gallons of water per minute and the one for the 2,000 k.w. machine, 3,800 gallons per minute.

The suction pipe of each pump is carried into the intake water channel and a closed system of delivery pipes leads the water to each condenser and back to the discharge channels.

Full advantage is taken of the syphonic discharge effect.

Auxiliary Plant

With the exception of the boiler feed pump the whole of the auxiliary plant in the station is motor driven by three phase motors at 400 volts between phases.

The auxiliary power supply is normally obtained from two 1,000 k.v.a. static transformers. The auxiliary turbo-alternator will be used to start up the auxiliary motors of either of the main turbines in the event of a total shut down of the plant.

A storage battery is installed for the emergency lighting of the station and for operating the E.H.T. switchgear and signal lamps.

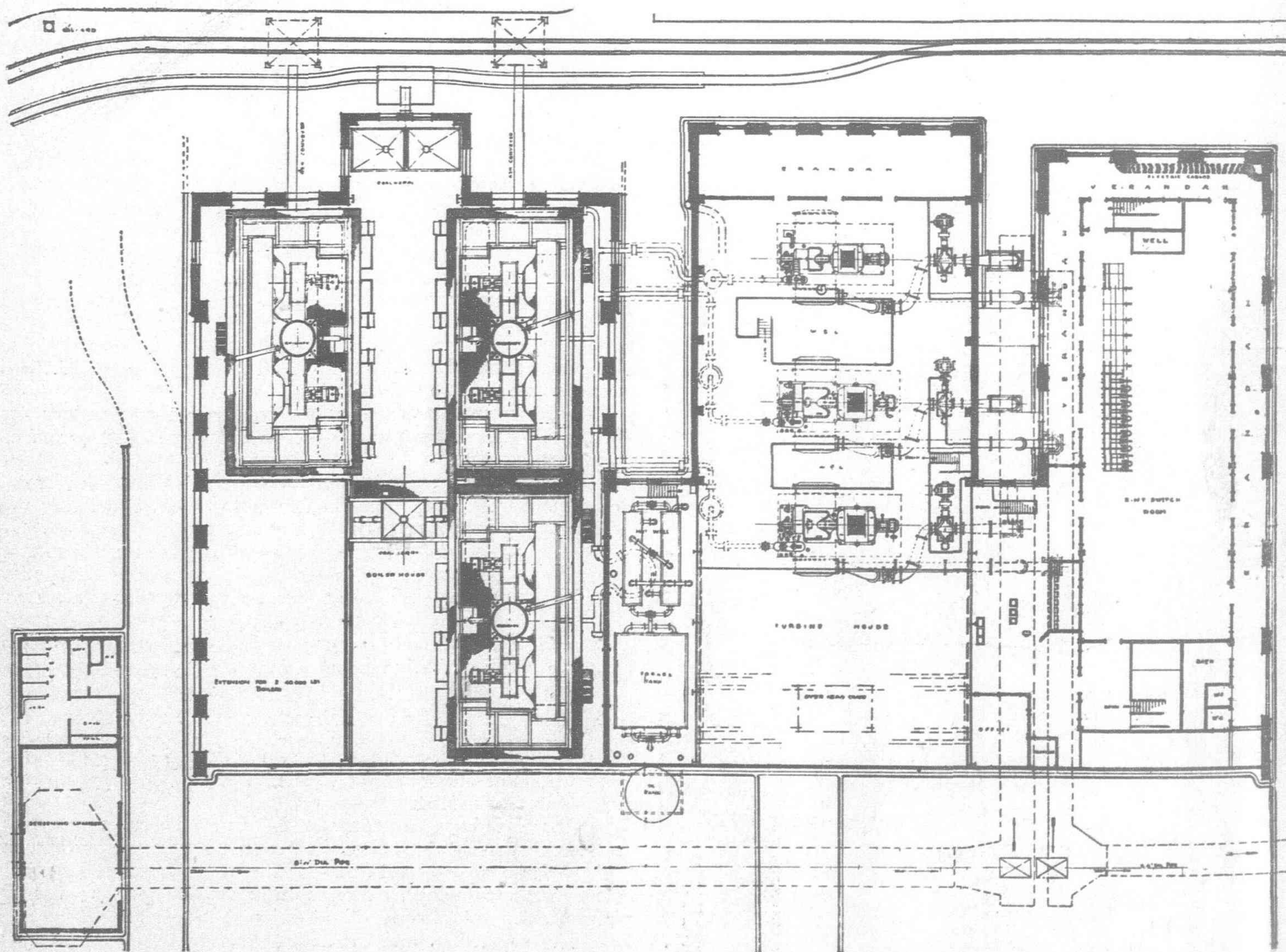
The supply to all auxiliary plant is by paper insulated lead covered, single wire armored cables.

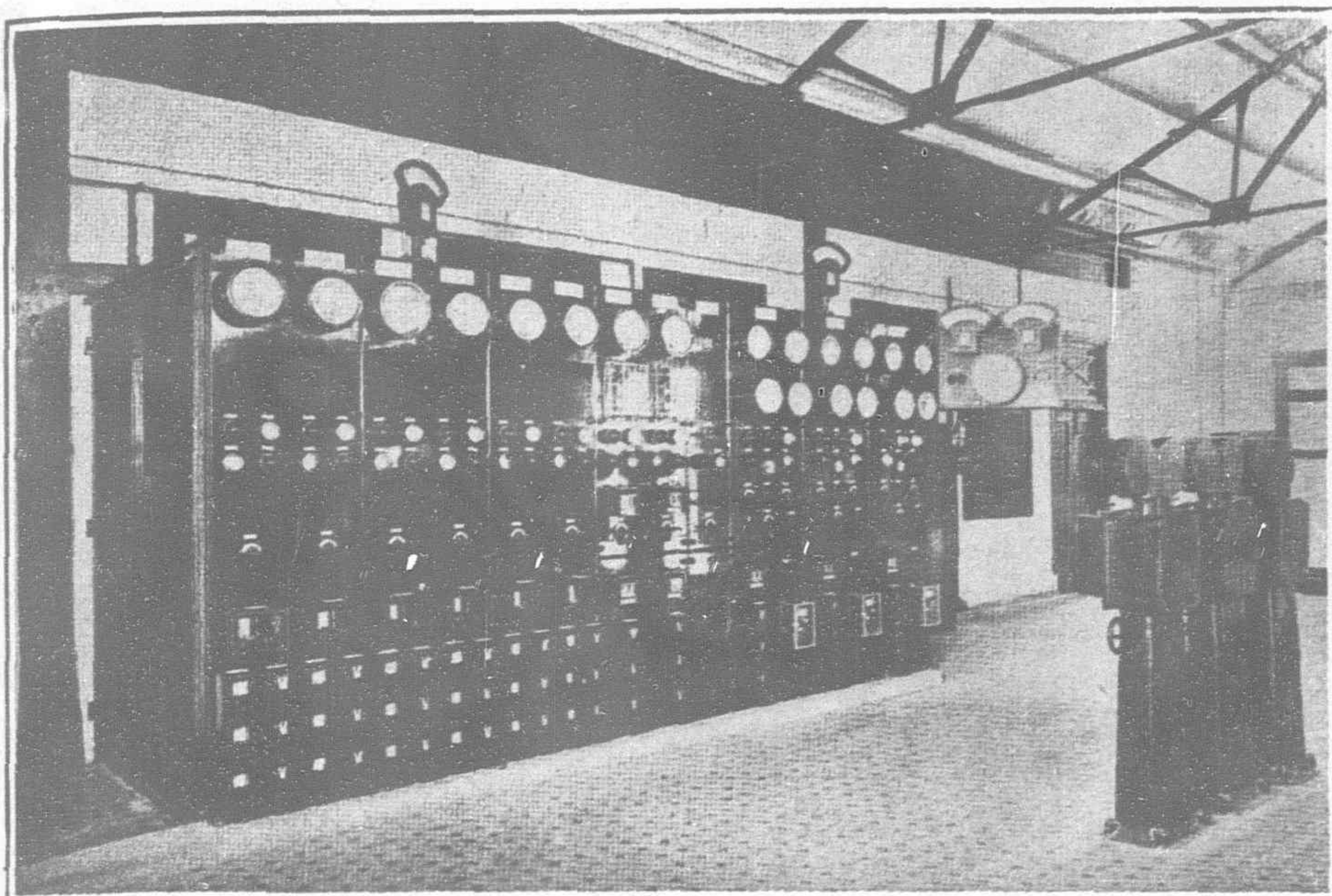
The main E.H.T. Cables from alternators, transformers and neutral points of the alternators are also P.I.L.C. and single wire armored.

The extra high tension Switchgear is of the armoclad compound filled type designed for a pressure of 6,600 volts. It is erected along one side of the second floor of the switch-house.

The floor space occupied by this type of gear is small which allows room on the same floor for considerable extensions.

The schematic lay-out of the E.H.T. and L.T. Switchboards may be seen from the annexed diagram.





St. James Power House: Extra High Tension Reyrolle Switchgear

Duplicate busbars are provided for the alternator and feeder circuits. A system of mechanical and electrical interlocks give protection against faulty operation of the switches. Indicating lamps are provided on this board and on the control board which show at a glance the position of all switches and the busbars to which they are connected.

The alternator oil switches are designed for 1,500 amperes per phase and the feeder oil switches for 800 amperes per phase, in each case at 6,600 volts. The oil switches will safely open under short circuit conditions with the station's ultimate working capacity of 40,000 k.w.

The whole of the main switchboard is operated electrically from a control switchboard erected in the upper floor of the control room which commands a complete view of the turbine room. The operation is by Direct Current at 100 volts.

An electric signalling apparatus is provided in the control room by which independent signals can be given to the starting platform of each turbine. The running up of each alternator is done on the stop valve by the driver, in accordance with the indication of a separate synchroscope near the starting platform.

This synchroscope is in parallel with a similar instrument mounted on the control switchboard.

When the alternator has been switched in the Switchboard Attendant takes control of the speeds and the retention of the load by electrical control of the governors of the turbines.

An iron grid resistance erected in an expanded metal enclosure in a room adjoining the battery room is used to earth the neutral point of the station of one or other of the running machines. The opening and closing of this switch is controlled by the switchboard attendant from the control room.

A red lamp is mounted on the control panel of each alternator and serves as an indicator to the attendant as to which alternator is earthed.

Balanced protection is used on the alternator circuits and split conductor protection also overload with definite time limit protection on the feeder circuits. Excess pressure dischargers have been provided for top and bottom busbars.

The Low Pressure auxiliary switchgear is of the ironclad compound filled type and is erected on the lower floor of the control room. It controls the low pressure side of the two station transformers, the motor generator, station lighting and all other auxiliary plant in the station.

Separate starting and control switchgear is mounted close to each individual motor throughout the Power Station. The motors operating

coal elevator and ash conveyor can be instantly stopped from several points by pressing special trip switches.

Transmission System

The transmission system has been laid and the Substations designed and equipped by the Municipal Electrical Engineer, Mr. E. W. P. Fulcher, M.B.E., A.M.I.E.E., who has held the appointment since 1921.

Energy is transmitted from St. James Power Station at 6,600 volts by underground cables to the following Substations:—George Street, Armenian Street, Bukit Pasoh, Jalan Pekan, Peoples' Park, Chatsworth Road, Killiney Road, Peirce Road, Dalvey Road, Newton Road, Mackenzie Road and Albert Street.

Eight feeder cables have been laid from the station each consisting of .06 sq. in. 6-core, lead covered, paper insulated and armored.

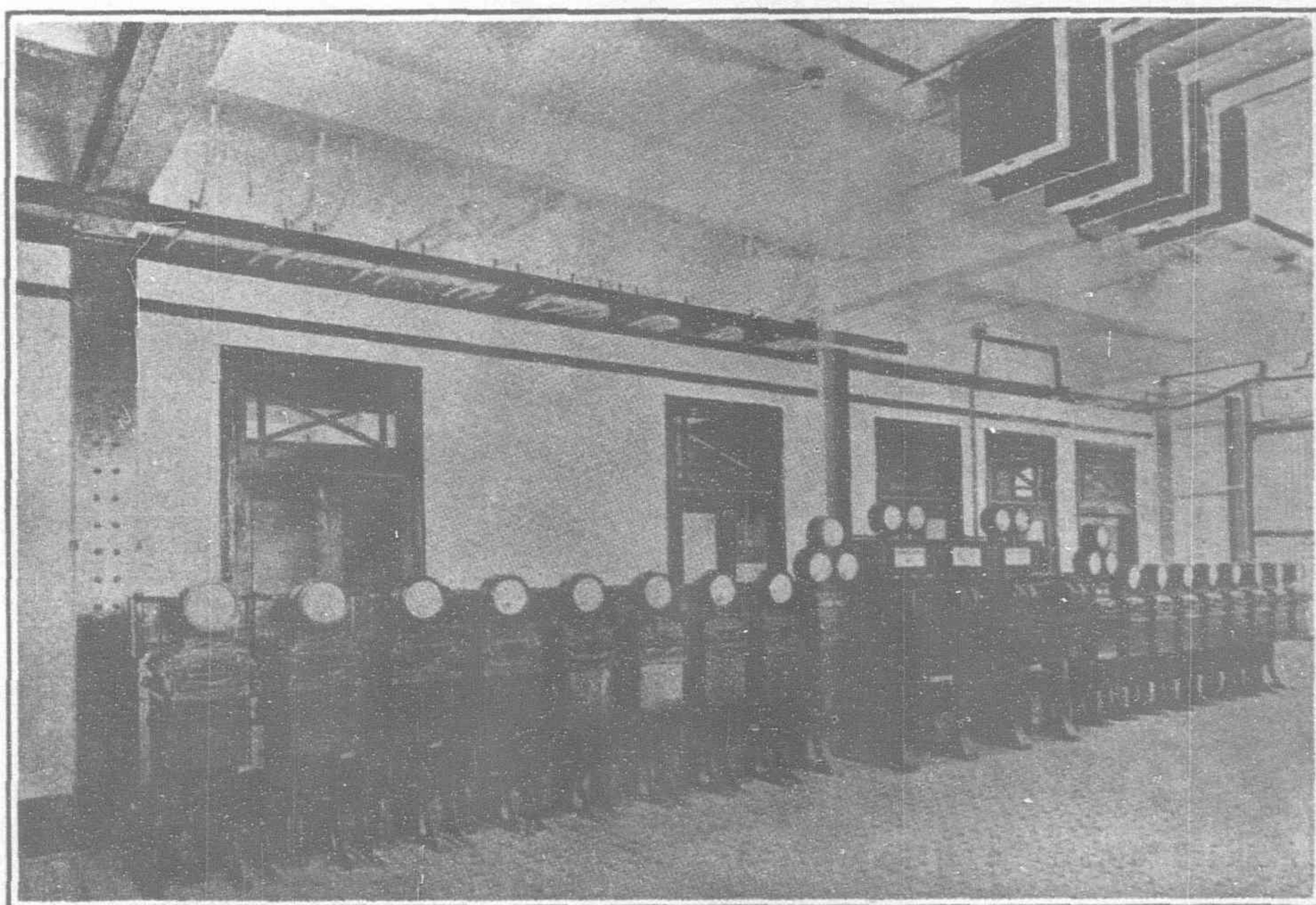
All Substations are in telephonic communication with each other and with the Power Station by means of 5 pair or 10 pair lead covered, paper insulated and armored cables laid in conjunction with the E.H.T. feeders.

A large proportion of the supply in the center of the town is given by direct current and rotary converters are used for this purpose which are in operation at George Street and Armenian Street Substations.

The remainder of the town and outlying districts are supplied with low pressure 3 phase, 4 wire Alternating Current from static Substations. All future extensions will be supplied from similar Substations.

Contractors and Sub-Contractors

Accumulators	D. P. Battery Co., Ltd.
Ash Conveyors	Spencer & Co., Ltd.
Boilers	Babcock & Wilcox, Ltd.
Stokers	Do.
Fans	Davidson & Co., Ltd.
Motors	Lancashire Dynamo Co., Ltd.
Steam Meters	George Kent & Co., Ltd.
C.O.2 Recorders	W. & R. Patents, Ltd.
Centrifugal Pumps	Mather & Platt, Ltd.
Coal Elevators	Spencer & Co., Ltd.
Crane	Thomas Broadbent & Co., Ltd.
Economisers & Chimney	Babcock & Wilcox, Ltd.
Feed Pumps	G. & S. Weir, Ltd.



L. T. Auxiliary Switchgear

Laboratory Equipment ..	Baird & Tatlock, Ltd.
Oil Filter	Jeffcock & Parsons, Ltd.
Pipework	Babcock & Wilcox, Ltd.
Covering	Bells Asbestos Co., Ltd.
Venturi Meters ..	George Kent & Co., Ltd.
High Pressure Valves ..	Dewrance & Co.
Low Pressure Valves ..	Glenfield & Kennedy & Blackborough & Sons, Ltd.
Storage and Hotwell Tanks	Thomas Piggot & Sons, Ltd.
Blow Down Tank ..	F. Braby & Co., Ltd.
Cast Iron Pipes ..	Stanton Ironworks Co., Ltd.
Screening Plant ..	Leward & Beckett, Ltd.
Station Lighting ..	Municipal Electrical Department
Switchgear	Reyrolle & Co., Ltd.
Cables	British Insulated & Helsby Cables, Ltd.
Signals	Chadburn's Ship Telegraph Co., Ltd.
Transformers	Metropolitan-Vickers Electrical Co., Ltd.
Turbo-Alternators and Condensing Plant..	Do.

Highways in the Hakone Lake District of Japan*

U.S. Trade Commissioner J. H. Ehlers, Tokyo

THE Hakone Lake district in southeastern Japan, noted for its scenic beauty and delightful views of Mount Fuji, is not directly accessible by railroad. The main lines of the Government railways from Tokyo circle it both to the north and to the south, converging at Numazu, just west of this district.

The national automobile highway from Tokyo to Kobe passes through the well-known resorts of Miyanoshita and Hakone. This road diverges from the railway line at Odawara, near sea level, and rises to an elevation of 2,900 feet in somewhat over 12 miles, descending to sea level after another 18 miles and joining the railway at Numazu, making a total length of highway of about 30 miles through the mountainous district. The road is of broken stone construction, wide enough to provide for the passing of two large motor busses except at curves, which are numerous and tortuous, and at very steep gradients.

Another principal highway in the district is that from Miyanoshita to Gotemba on the main line of the Government railways, a distance of about 17 miles. This highway reaches an elevation of 3,100 feet at the point where it tunnels through a mountain range at Long Trail Pass, midway between Miyanoshita and Gotemba.

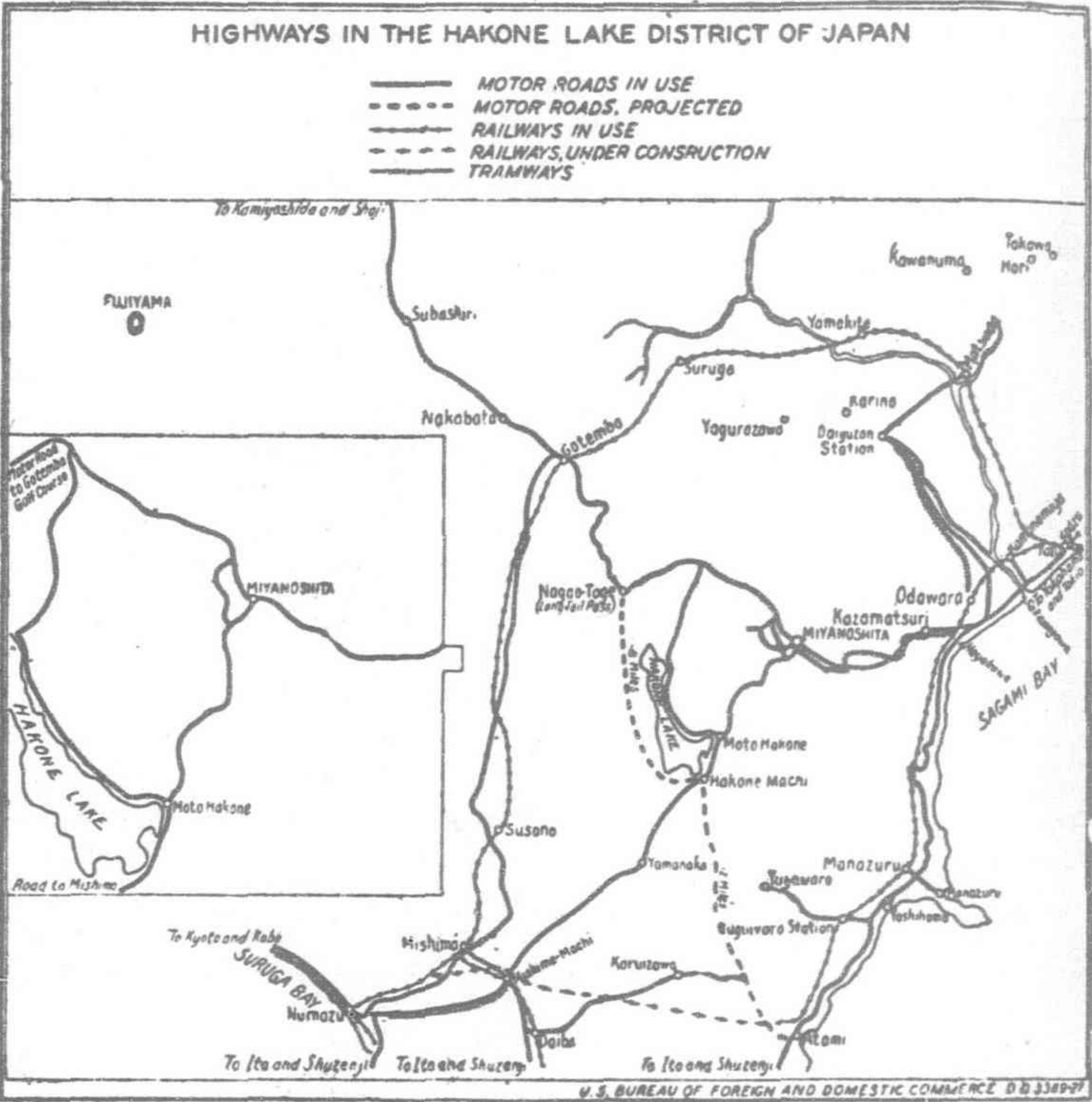
These two principal highways are open throughout the year, although frequent landslides during the early spring make careful attention to maintenance necessary.

Excellent automobile service is available throughout the district. The Fujiya Automobile Garage Co. practically controls transportation throughout the district. This company, capitalized at Y.1,000,000 with Y.746,000 paid up, operates 37 large motor busses and 85 touring cars. The cars are of American make, with the exception of a few busses and two touring cars. The company operates bus services from Miyanoshita to Odawara, Yokohama, Numazu, Hakone, Atami, and Gotemba. This company is exceptionally progressive and aggressive in developing transportation in the district. It renders some assistance in the maintenance of the various public highways over which it operates.

During the year 1928, the Fujiya Automobile Garage Co. proposes to begin the construction of a private highway from Long Trail Pass, along the ridge on the west side of Lake Hakone, to the village of Hakone, a distance of 8 miles. Later the road will be continued to Atami, a further distance of 12 miles. The first 8-mile

section is expected to be open for traffic in one year. The entire 20 miles of highway will be of concrete, 30 feet in width, and will cost approximately Y.1,000,000.

The completion of this highway will open up comparatively inaccessible regions of exceptional scenic beauty. The ridge along the west shore of Lake Hakone affords an unobstructed view of Mount Fuji throughout its entire length to the west, and to the east



a view of picturesque Lake Hakone. The entire highway will be a most popular one for the heavy tourist traffic in this vicinity. This will be a privately owned motor road. It is not known exactly under what conditions the concession for its construction was obtained, but it will undoubtedly be open for public use on payment of tolls. Contracts for the construction of this road will probably be entered into about April, 1928.

China's Foreign Trade

IN the August issue of the FAR EASTERN REVIEW, we published a report on China's foreign trade. Our attention has been called to certain discrepancies, particularly in connection with British trade, and the following figures which are taken from the Chinese Maritime Customs are official and correct:—

Value of Direct Trade between China and Foreign Countries in 1926 and 1927.

	1926	1927
Japan	549,000,000	503,000,000
Hongkong	218,000,000	382,000,000
U. S. A.	338,000,000	289,000,000
Great Britain ...	172,000,000	133,000,000
British India ...	95,000,000	64,000,000
France	85,000,000	66,000,000
Germany	63,000,000	60,000,000
Italy	22,000,000	21,000,000

Our attention has also been called to the fact that the increase in Hongkong's trade is more nearly 75 per cent. than 4 per cent., as stated in our August issue.

*Commerce Reports.

The Future of Radio in China*

By H. O. Kung

Secretary, The Chinese Engineering Society, American Section

HERE is no excuse for a country like China remaining without modern equipment for radio communication. In the past decade, in fact, the Chinese Government has been endeavoring to establish a reliable radio communication with the rest of the world as well as within her own territory. In view of the financial difficulty, the Government entered into a number of contracts with several radio concerns of foreign countries. The first one of its kind was the contract entered upon in February, 1918, by the Navy Department of the Chinese Government with the Mitsui interests of Japan. Under that contract the Chinese Government has been in debt to the amount of £536,167, at 8 per cent. per annum. By the right under that contract the Japanese party built a powerful radio station at Tungchow, near Peking, China. The Tungchow radio station has been constantly in communication with Europe and other parts of the world, since its completion in 1914.

The second radio contract was entered upon in August of the same year by the War Department of the Chinese Government with the British Marconi Wireless Telegraph Company. By that contract the War Department acquired £300,000 worth of radio apparatus for military use. The total amount of contracted debt was £600,000, bearing an interest of 8 per cent. per annum. This contract created a concern known as the Chinese National Wireless Telegraph Company which was jointly owned by the two parties.

The third contract, being the most important one of these three radio contracts, was entered into by the Department of Communications of the Chinese Government with the Federal Telegraph Company of California, U.S.A. The main agreement was executed in January 8, 1921. Supplementary to the main agreement, another agreement was entered into between the Chinese Government and the Federal Telegraph Company, this agreement, providing several minor modifications for the original agreement, and including the consent and approval of the Chinese Government for the organization of the Federal Telegraph Company of Delaware. The formation of the new concern provided another agreement between the Federal Telegraph Company of California and the Radio Corporation of America, which has most greatly stimulated the radio industry of the United States of America. In fact, the Radio Corporation of America dominates the radio communication of the world. The formation of the

Radio Corporation involved not only the practical status of radio communication but also the political issue between Britain and America. There is very little doubt that the Radio Corporation of America will actually control most of the radio communication around the globe within the next few decades. In order to present a clear picture of world-wide radio communication it is very necessary to review some of the important events in the history of radio development.



General J. G. Harbord, President of the Radio Corporation of America

The New Federal-Brandes, Inc.

The Federal Telegraph Company was incorporated under the laws of California in February 14, 1911, as the Wireless Development Company, its name changing later to the Federal Telegraph Company. This company possessed certain wireless stations, radio apparatus and the exclusive right to make, use and sell the United States patents obtained by Messrs. Poulsen and Pederson, inventors of early arc transmitters for radio communication. This company has been engaged in the ship-to-shore radio communication business on the Pacific coast.

In 1926, a new organization, the Federal-Brandes, Inc., was formed in the States of Delaware in order to strengthen the financial standing and to widen the market for their products.

Brandes, Inc., was a holding corporation located in New York. That corporation possessed the entire capital stocks of the Brandes Products Corporation, Brandes Laboratories and two other Brandes interests in Canada and England.

The Federal-Brandes, Inc., was incorporated in July 1, 1926, under the laws of Delaware with the purpose of a common holding of the Federal and Brandes interests. In November 1, 1926, this new organization purchased the entire capital stock of all the Brandes interests, including the two in Canada and England. On the same date, this new concern commenced to acquire the

capital stock of the Federal Telegraph Company through a plan by which stock holders of the Federal Company were offered an opportunity of exchanging their \$10 par value stock in that company, for share, "A" common stock of the Federal-Brandes, Inc. At the present, the entire capital stock of the Federal Telegraph Company has been acquired under that plan.

Federal-Brandes, Inc., has capital stock consists of 500,000 shares class "A" voting common of no par value and 20,000 shares

*This paper was presented before the first annual convention of the Chinese Institute of Electrical Engineering in America, at Boston, June 10, 1928.



Underwood and Underwood

Owen D. Young, Chairman of the Board of Directors for Both Radio Corporation and General Electric Company.

class "B" non-voting common of no par value. There is no preferred stock in this corporation at the present time. The consolidated income sheet of the Federal-Brandes, Inc., for 14 months operation, ending December 31, 1927, consists of the following statement:

1. Net sales	\$11,039,678
2. Cost, expenses and royalties	10,314,127
3. Operating profit, (1)-(2)	725,551
4. Other income	1,114,991
5. Gross income, (3)-(4)	1,840,542
6. Income charges, including interest ..	1,124,679
7. Net income (5)-(6)	715,863
8. Dividends	42,383
9. Surplus (7)-(8)	673,480

The combined organization has been making more profit than either individual concern could possibly have made, whereas the management of the Federal-Brandes, Inc., retains almost the same personnel as that of the former Federal Company alone. There is no doubt that the China-Federal Contracts on radio communications can be accomplished so long as the Federal-Brandes, Inc., retains with same personnel as the old Federal Telegraph Company. Unless the Chinese Government would break the China-Federal Contracts, modifications will be necessary to bring the terms suitable for existing conditions in China.

The China-Federal Contracts

The first agreement entered into at Peking, in January 8, 1921, between the Chinese Government and the Federal Telegraph

Company of California set forth the following main provisions:

- (1) The Government and the Company entered into a joint partnership for a period of 10 years.
- (2) The Company agreed to erect, install and operate five radio stations, two in Shanghai, one in each of these cities, Peking, Canton, and Harbin.
- (3) The cost for the stations and equipment should be \$4,617,500.
- (4) The Government was to furnish to the Company a bond issue of \$2,308,750 bearing 8 per cent. per annum.
- (5) After the expiration of the joint partnership, the Government should acquire all the properties, equipment and apparatus and should pay to the Company for ten years the following royalties:
 - (a) 20 per cent. of the first million gold dollars.
 - (b) 10 per cent. of each additional million gold dollars, out of profit.
- (6) The China-Federal Radio Administration should be composed of two directors, one Chinese and the other an American citizen, one American engineer-in-chief, and other members of staff of both nationalities.

This agreement was signed by Yeh Kung-cho, Minister of Communications for the Chinese Government and Barnes Moss for the Federal Telegraph Company.

In addition to the above contract there was a supplementary agreement executed at Peking in September 9, 1921, signed by C. T. Chang, Minister of Communications, and B. Moss, Attorney of the Company. This agreement set forth the rules and regulations regarding to the issue of bonds and other financial problems of the China-Federal Radio Administration.

Immediately following the execution of the China-Federal Contracts, the Radio Corporation of America made an enormous effort to participate in radio communication in China. This effort yielded a new organization known as the Federal Telegraph Company of Delaware.

The Political Issue

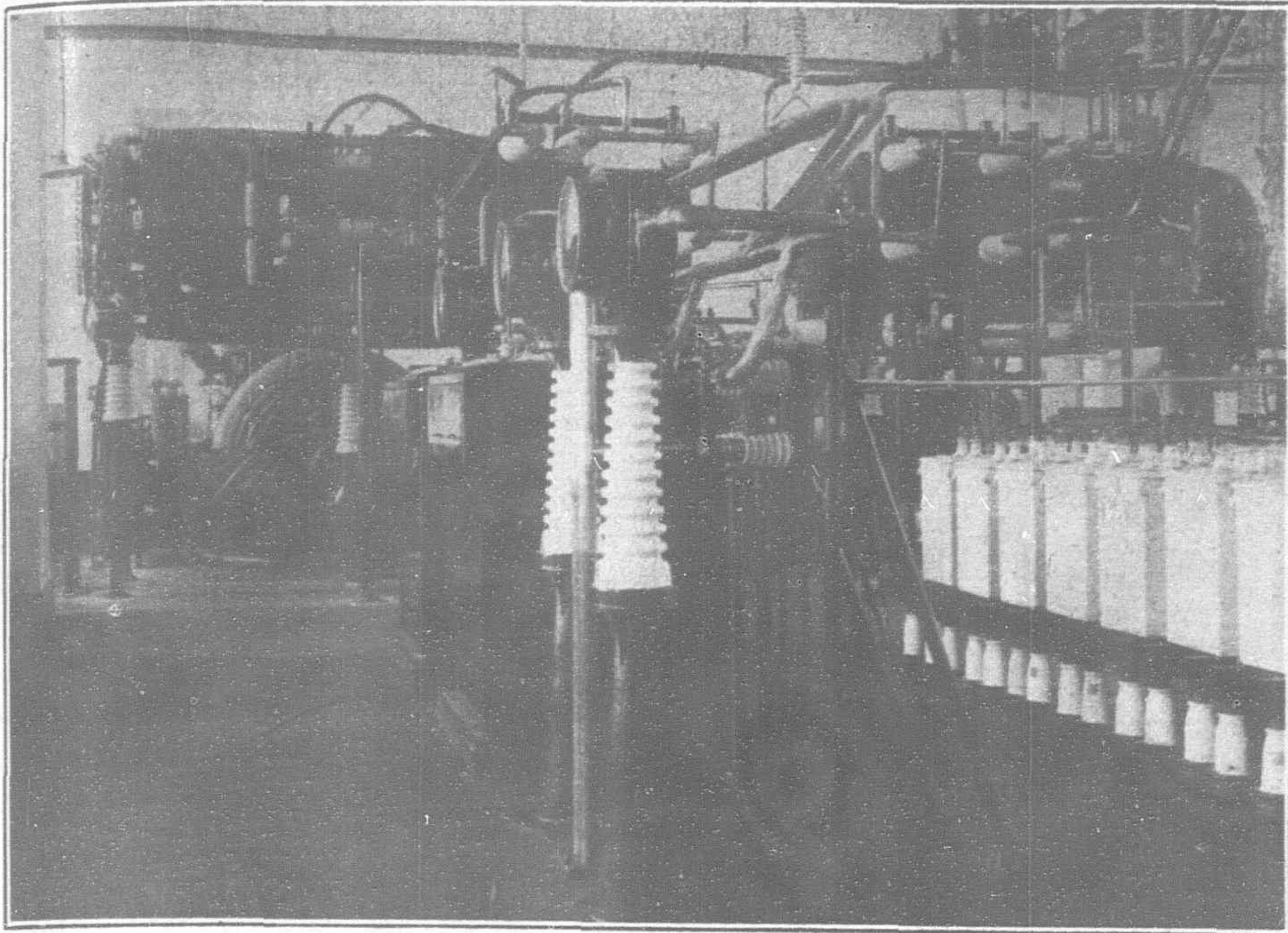
Prior to the formation of the Federal Telegraph Company of Delaware, the Radio Corporation of America had considerable correspondence with the Navy Department of the American Government, in which it explained the critical situation and the political reason for its formation.

Mr. Owen D. Young, chairman of the board of directors of the Radio Corporation in a letter to the U. S. Navy Department pointed out:

- (1) That prior to the world war the American Marconi Company was the largest radio company in the United States and that the said Company had not been in the full confidence of the Government, because a large percentage of its stock was owned by British citizens.
- (2) That at the time of writing, each of the British Marconi Company, the Federal Telegraph Company and Mitsui interests of Japan held a concession from the Chinese Government for international radio communication and that the question as to the rights and privileges under the above mentioned radio concessions was a subject of diplomatic negotiation.
- (3) That the Radio Corporation of America had been carrying on direct communication with England, Germany, Norway, France, Japan and the Hawaiian Islands.
- (4) That the American, English, French, German and Japanese should join in the immediate transfer of all their concessions, rights and properties in and for China to a board of trustees, upon which each of the nationals should be equally represented and upon which the Chinese should have such additional representatives as seemed appropriate under the circumstances.

In reply to the above proposal, the U.S. Navy Department expressed its viewpoint as follows:

- (1) Any arrangement as to the radio communication in China should permit of the Federal Company's being able to compete for the radio business within and without China.
- (2) An arrangement favorable to a monopoly by a single communication company, though limited to a particular service, would but lend a means toward extending monopoly to other services such as development and distribution of apparatus in general.



No. 2 Generating Room, West Station.—Shuang-Chiao Wireless Station

Upon the receipt of a copy of the above letter from the U.S. Navy Department, Owen D. Young wrote again to the Navy Department and explained that such a proposal would not create a monopoly. In addition he expressed his personal views :

- (1) That the object was to establish the position of America in the field of international communication by making its position in radio equal or superior to that of any other country in the world.
- (2) That he was in favor of private ownership rather than government exploitation.
- (3) That this was absolute necessary if America was to take and hold a place of position and influence in international radio communications.

In a letter to Senator E. Root of the U.S. Congress, Owen D. Young expressed his viewpoint concerning co-operation with the Federal Telegraph Company of California as follows :

- (a) That Federal Company would remain free from domination and control of cable interests and devoted itself to external communications of China by radio.
- (b) That the American end of Chinese communications should be handled by the Radio Corporation of America.
- (c) That terms fair alike to the Federal Company and the Radio Corporation could be made as the basis of such co-operation.

The Formation of the Delaware Company

The formation of the Federal Telegraph Company of Delaware was provided for in agreements between the Radio Corporation of America and the Federal Telegraph Company of California. The agreements provided that these two parties enter into a joint partnership for building and operating in China certain radio stations for oversea service ; that upon approval of the arrangement by the Chinese Government with certain modifications of the contracts, a new company should be formed ; that the new company should be incorporated in the State of Delaware, which should take over and carry out all of the rights and obligations of the China-Federal Contracts ; that the Radio Corporation should nominate a chairman for the board, and the president of the California Company should be the presidents ; that these two parties would grant the new Delaware Company a non-exclusive

license under all of their U.S. patents on their apparatus, to use in China, but not to make or sell.

There was another agreement executed on September 8, 1922, between the Radio Corporation and the Federal Company of California. In that agreement the question of financing of the new Delaware Company was clearly settled : The Delaware Company should be capitalized for \$9,500,000 and should issue bonds for \$3,500,000, bearing 7 per cent. interest per annum. The Delaware Company should issue \$3,500,000 preferred stock or 35,000 shares at \$100 per share par value and should issue \$6,000,000 of common stock, or 600,000 shares at \$10 per share, par value. If the entire bond issue was purchased by the Radio Corporation and none by the Federal Company, 70 per cent. of the 600,000 shares of common stock should be issued to the Radio Corporation and 30 per cent. to the Federal Company.

In response to the new Delaware Company, R. P. Schwerin, President of the California Federal Company, addressed a letter, on February 2, 1923, to the Chinese Minister of Communications at Peking, for a few modifications to be set forth of the main and supplementary contracts. In return the Chinese Government consented and approved of the formation of the new company, and that approval was carried out by Y. L. Woo, Minister of Communications, on July 13, 1923.

The Radio Corporation of America

The formation of the Radio Corporation of America and its control of patents, and of the sale and manufacture of radio apparatus created a great sensation in the radio industry in America. A number of complaints were filed by various industrial concerns and inventors with the Federal Trade Commission at Washington, charging that the General Electric and others had set up the Radio Corporation as a bogus independent, and by the use of tying contracts and price discrimination in the sale of its products was attempting to acquire a monopoly on the manufacture and sale of radio apparatus, and that the Radio Corporation was curtailing its output of radio tubes for the purpose of hindering the manufacture and sale of radio apparatus by its competitors. Thereupon the U.S. House of Representatives authorized the Federal Trade Commission to investigate (a) the ownership of radio patents and (b) contracts, or agreements relating to radio industry. After con-

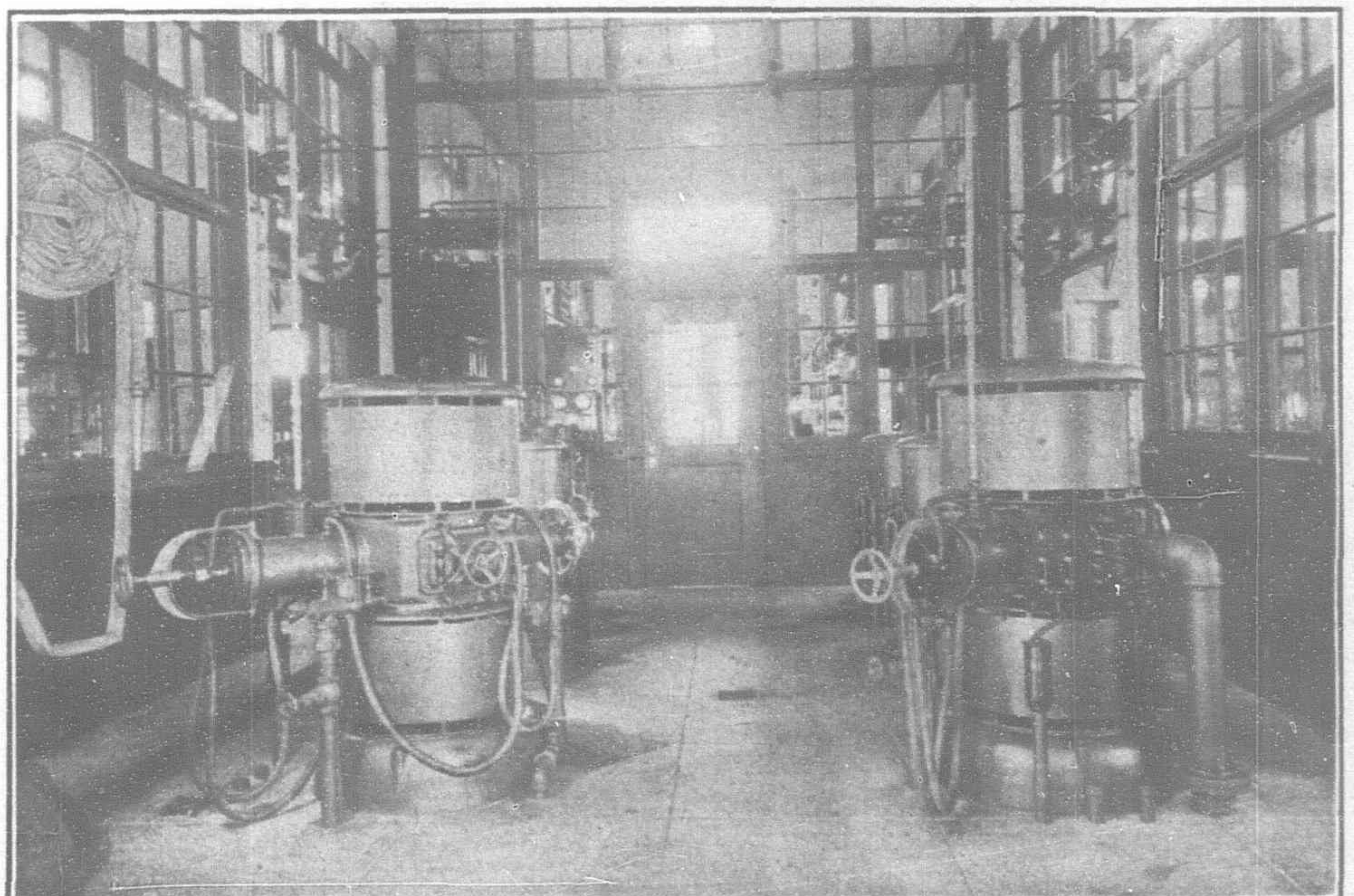
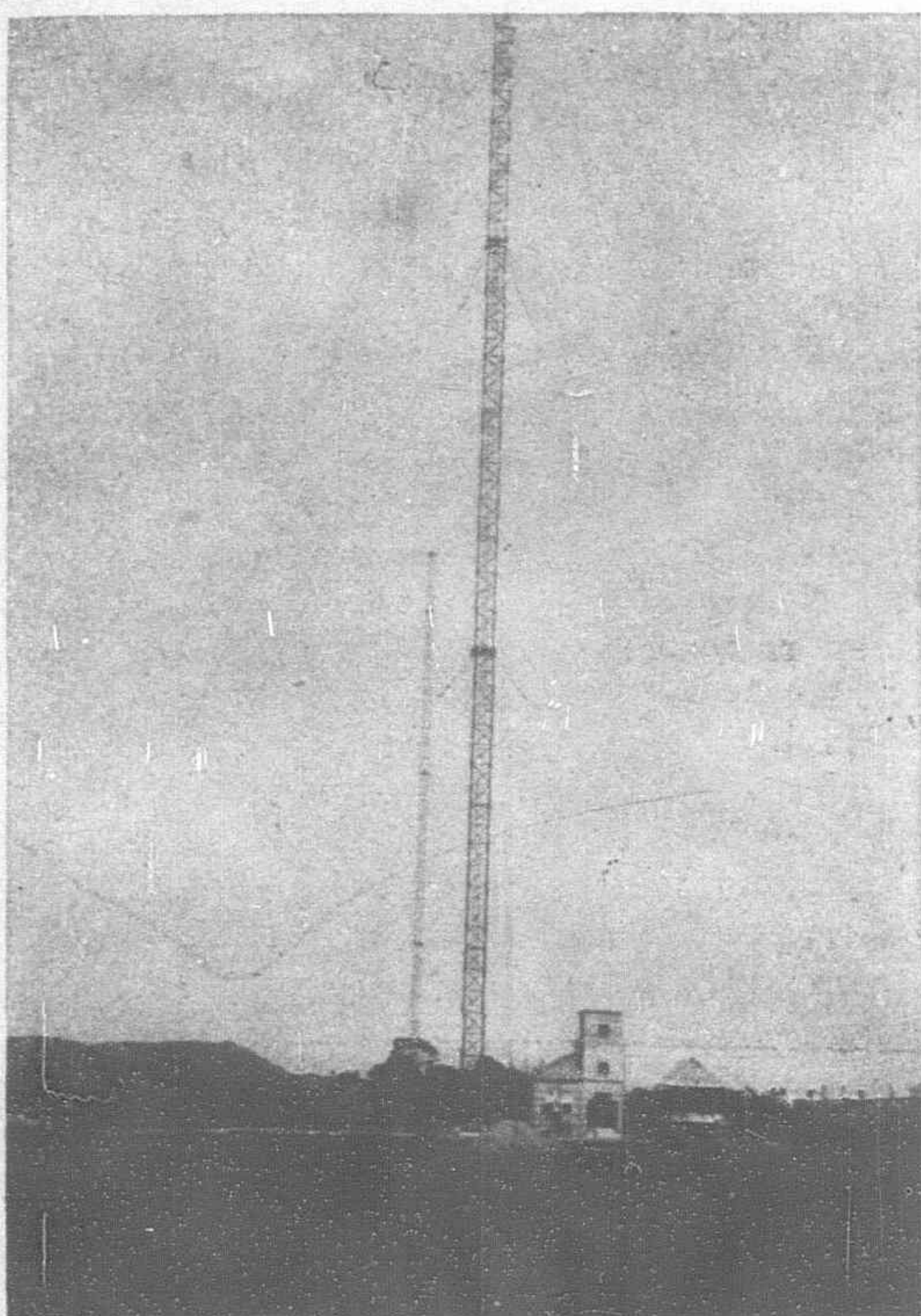


Photo by Courtesy of Mackay Radio and Telegraph Co.

Arc Transmitters, Marsh Station, San Francisco; One of the Federal Telegraph System, Operated by Mackay Radio & Telegraph Co.



The Antenna Mast, Canton, New Wireless Station

siderable investigations had been made by the Federal Trade Commission, a report of the radio industry was submitted to the House of Representatives.

At the time of writing, the Federal Trade Commission charges the Radio Corporation of America had violated the laws against unlawful restraints and monopolies. The charges are directed against license agreements made by the Radio Corporation with about 25 principal radio manufacturers, representing approximately 95 per cent. of production. Under

latter in 1919. The Telefunken Company, a German concern, had erected a high-power radio station at Sayville, Long Island; it was taken over by the U.S. Government during the World War. The Compagnie Generale de Telegraphie sans Fils, a French concern, had built a high-power radio station at Tuckerton, N.J. Later, that station was bought by the Radio Corporation.



Despatching Office.—Shuang-Chiao Wireless Station

such agreement a three-element radio tube must be purchased from the Radio Corporation, with no opportunity for competition by other tube manufacturers. The outcome of this case remains to be seen.

In October 17, 1919, the General Electric Company took the initiative and organized a corporation known as the Radio Corporation of America under the laws of the State of Delaware, with a capital of 5,000,000 shares of preferred stock at par value of \$5 a share, and 5,000,000 shares of common stock of no par value. The nature of the business of the new organization was set forth in the certificate of incorporation as being:

- (1) To send and receive signals, messages and communications,
- (2) To create, install and operate a system of communications which may be international,
- (3) To acquire patents, patents rights, etc.,
- (4) To manufacture and sell radio devices, etc.

One other important provision embodied in the fundamental laws of the Radio Corporation reads as follows:

"No person shall be eligible for election as a director or officer of the Corporation who is not at the time of election a citizen of the United States."

This provision was in accord with the suggestion made by Admiral Bullard for retaining control of the Radio Corporation of America in the hands of American citizens.

World-Wide Radio Agreements

The formation of the Radio Corporation of America involved a proposal for international communication by radio. With this in view, the Radio Corporation had negotiated numerous radio traffic agreements with foreign countries, including England, Germany, France, Japan, Italy, Norway, Poland and South America. The Chinese Government, too, had entered into contracts with the Radio Corporation of America, although the contracts were not directly countersigned by the latter party.

Prior to the formation of the Radio Corporation there were few concerns who were supposed to be engaged in the radio communication business having an international nature. The first one that was formed in the United States to engage in the business of trans-ocean communications by radio was the Marconi Wireless Telegraph Company of America, which was controlled by its parent company, the British Marconi Company. It had erected radio stations in New Jersey, California and Hawaiian Islands. Its business and other assets were taken over by the Radio Corporation of America shortly after the organization of the

Beside the above cited radio concerns, there were two other companies which also engaged in the Communication business by radio within and without the United States. The first one was the Tropical Radio Telegraph Company, a subsidiary to the United Fruit Company, which maintained a system of radio stations on its steamships throughout Central America and at New Orleans, La., and Boston, Mass., for communication purposes for its parent company. The second company was Federal Telegraph Company of California, which confined its operations principally to a ship-to-shore communication service and a land radio communication service between the States of California and Oregon.

In an endeavor to achieve international communication by radio, the Radio Corporation of America had a traffic agreement with the British Marconi Company. Under that agreement the British Company was to exchange radio messages with the Radio Corporation of America.

As was mentioned in the beginning of this paper, the British Marconi Company went into a radio contract with the Chinese Government and thereupon set up a concern known as the Chinese National Wireless Telegraph Company, jointly owned by the two parties. Relating to this contract the international traffic agreement between the Radio Corporation and the British Marconi Company has agreed in a manner as set forth in "Article V-China," which reads as follows:

"No licenses or rights are granted by either party to another party with respect to or for use in China except that if the Radio Corporation sells to the British Company or its nominee any radio device for exportation to or use in China such devices may be exported to and used in China, and it is agreed that Alexanderson alternators and their accessories will be sold by the Radio Corporation to the British Company exclusively for this use (so long as the Chinese National Wireless Company continues to hold a monopoly of radio devices in China.)

"The British Company represents that it owns one-half of the stock of and by agreement is entitled for a period longer than the term of this agreement to nominate and elect or cause the election of a majority of the Directors of the Chinese Company hereinbefore referred to which has by agreement with the Chinese Government a monopoly of radio in China. The British Company agrees to vote for exclusive traffic arrangements so far as concerns communications from, to and through the Chinese Republic, and from, to and through the territory of the Radio Corporation such and for such duration as the British Company is by this agreement obliged to offer the Radio Corporation with respect to stations in its own territory."

It should be noted that the China-Marconi Contract had set up the Chinese National Wireless Telegraph Company which was supposed to enjoy a monopoly of radio in China. Nevertheless, the Chinese Government had entered, both before and since into several radio contracts other than the China-Marconi Contract.

For the public utility, a regulated monopoly is sometimes as good as a competitive activity so far as the regulation of its rates and service is concerned. However, in the Chinese territory, so far behind in radio development as compared with the other well developed countries, it is very undesirable to have any agency having a monopoly, which would prevent others from going into the radio field, thus restraining the trade.

Through the purchase of the assets of the American Marconi Company, the Radio Corporation of America has obtained a radio traffic agreement, made in August 22, 1916, between the American Marconi Company and the Imperial Japanese Government. Under that agreement, trans-Pacific radio messages have been handled through a Japanese station at Funabashi, near Tokio, Japan, and two of the Marconi Company's stations at Hawaii and San Francisco.

With Germany the Radio Corporation went into two radio agreements; one was with the Minister of Posts of the German Government and the other was with the Telefunken Company. The agreement between the Radio Corporation and the German Government was signed August 10, 1920, and provided that the Radio Corporation transmits over the German line all telegrams received by it for transmission by radio to Germany and other countries, and that the Radio Corporation accepts all radio telegrams for transmission to the United States and other countries, which might be handled to it by the Germany company.

The other agreement between the Radio Corporation and the Telefunken Company was signed October 22, 1921, and provided not only the traffic agreement but also an exchange of certain radio patents rights. The significant part reads as follows:

"The Radio Corporation and the Telefunken Company pledge to the other mutual support in their respective territories and the full and profitable enjoyment of the business to be conducted under the respective patent rights which they have granted one to the other by this or other agreements and agree in principle to making mutual traffic arrangements wherever possible throughout the world."

Likewise, two French radio companies, the Compagnie Generale de Telegraphie Sans Fil and the Radio France, went into contracts with the Radio Corporation. That contract was executed at Paris in October 26, 1921, and was merely a traffic agreement for the transmission and reception of messages by radio between America and France and their territories.

Similar agreements were also made by the Radio Corporation with the governments of Poland, Sweden and Norway. The agreement with Norway, however, was assigned to the Radio Corporation of America by the American Marconi Company as a part of their main agreement made March 27, 1920.

China alone remains practically inactive in the field of international communication by radio, except that some facilities have been or are to be provided under the rights of contracts by the Mitsui interests of Japan, Marconi Company of England and the Federal Telegraph Company of Delaware.

The Progress of Radio in China

Nevertheless, the progress of radio development within China from both commercial and entertaining

standpoints, has been remarkable during the past three or four years. The utilization of radio devices by military agencies for field communications has materially stimulated the radio market in China. Private firms who are seeking for profit from selling radio devices have established broadcasting stations in principal cities of China. The Government, too, has gone into the field of public broadcasting either for money-making or entertaining purposes. The Radio Corporation of China, has been organized not long ago and is maintaining sales offices at Peking and Tientsin. Hundreds of Chinese students who have an interest in radio have been taking the task of amateur radio development, which has been so remarkably successful in the United States of America.

In Manchuria, the North-Eastern Wireless Administration has been operating eleven radio stations, established in principal cities, including Mukden, Manchuli, Changchun, Newchwang, Kirin City, Fuching, Heiho, Harbin, Yenching, Suifengho and Tsitsihar. The radio station at Harbin, built with \$50,000 raised by public subscription, has started broadcasting since January 1, 1928. The Harbin station broadcasts three times a day—noon, afternoon and evening. The wave-length is 445 meters. Some radio stations in Manchuria are able to communicate with Europe. It is said that the North-Eastern Wireless Administration has entered into radio traffic agreements with radiogram companies both in Germany and France. The total cost of erecting these eleven radio stations was close to \$1,300,000.

The regulation for broadcasting in Manchuria is somewhat similar to that formulated in Britain. A person who purchases a radio receiving set must pay one dollar for registration and six to twelve dollars a year, varying with the size of the radio set, for license to the Administration. This regulation has been enforced since September 1, 1926.

In Tientsin, the Government as well as the radio companies are commencing radio broadcasting to the general public. Their radio receptions are getting better as they gain in experience. In addition to the entertaining broadcasting, the Government radio broadcasting station is rendering a broadcasting service for commercial advertising. A period of ten minutes each evening between 9:25 and 9:35, immediately after the regular broadcasting service, has been devoted to this service. Messages from merchants are broadcast to the public. Advertisements are grouped in 30 words. A fee of two dollars is charged for each group of advertisement. Conditions in China are different from America. Should such an advertising service as is being rendered in any one of these several hundreds radio stations be attempted in America, the operator would have soon to find out nobody was listening to him.

The Nanking Government has been progressing in radio communication during the past two years. At the time of writing, 17 radio stations have been installed in principal cities by the Nationalist Government. These stations are located at Nanking,

Shanghai, Canton, Hankow, Wuchang, Woosung, Ningpo, Hangchow, Tsungming Island, Kiukiang, Chengchow, Loyang, Taiyuan, Amoy, Foochow, Yunanfu and Nanchang. The first station was erected at Nanking by Mr. C. C. Chu, now Chief Engineer to the Radio Administration of the Nanking Government. All other stations, except that at Woosung, are using short wave transmitting. The reasons for adopting short wave transmission were, probably, that the equipment cost less than that for long wave length and that a greater distance can be reached at a nominal output. Most

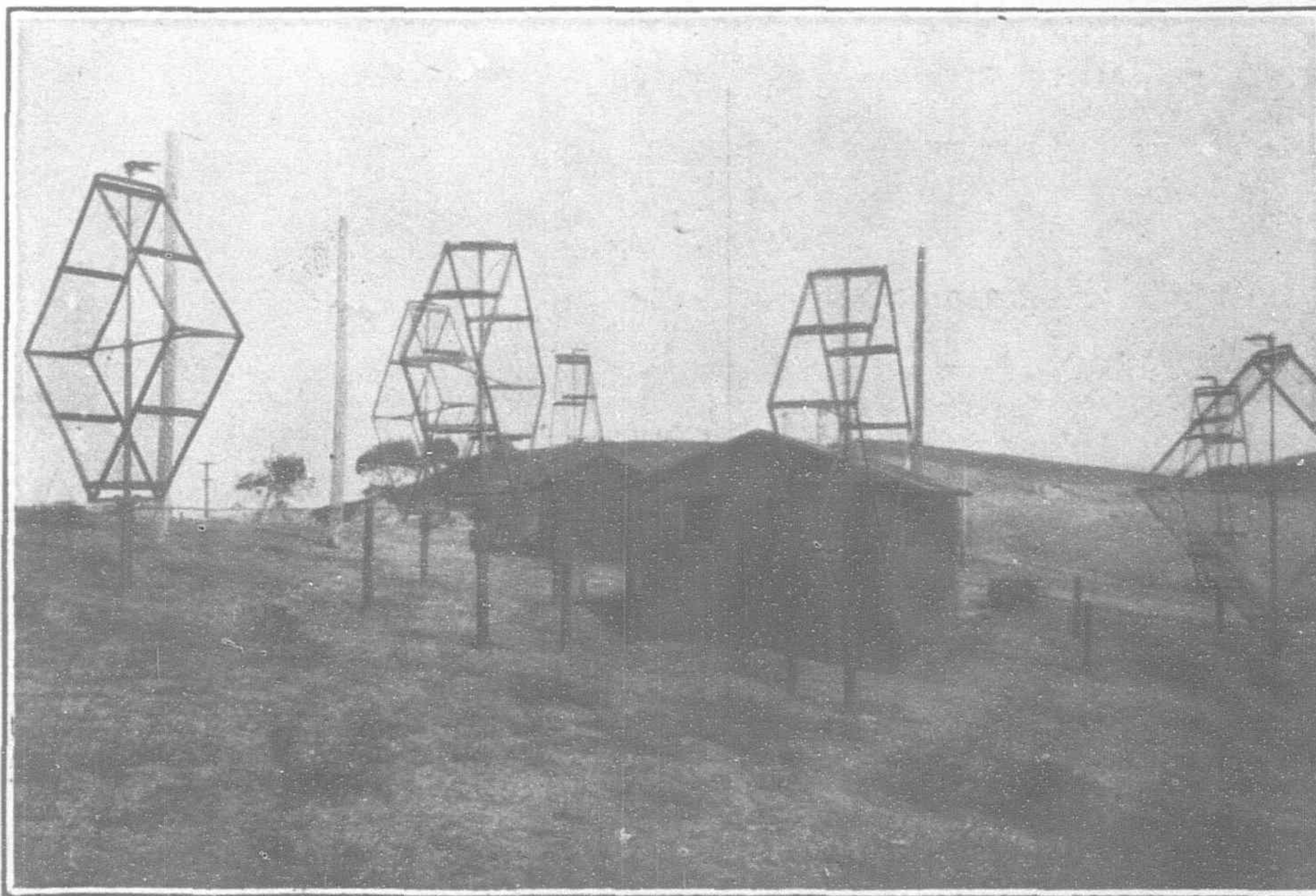


Photo by Courtesy of Mackay Radio and Telegraph Co.

Rotatable Loops of the San Francisco Receiving Station, Daly City, California; One of the Federal Telegraph System.

of these stations are built primarily for military use. However, some of them have been opened to private messages at a reasonable cost. The Nanking radio station is daily exchanging messages with Canton, Shanghai, Harbin, Kiukiang, Loyang and Taiyuan.

Schools and training courses have been established here and there in China. The first school to have a radio course is Nanyang University. Hundreds of radio amateurs have been turned out from that University. Others who have an interest in telephone, telegraph or general electrical work, constitute another portion of radio amateurs in China. In view of the need of radio operators and engineers, the Nanking Government has established a training school at the Radio Works, Shanghai, China. This school was started in June, 1927. Three courses are being given: one is devoted to radio engineering and is open to college graduates; the second is devoted to radio mechanics; and the third, to radio operators. Both of the latter two courses are open to high school graduates.

A similar organization is also found in Mukden, Manchuria. This school is divided into two departments, the Engineering Department and the Intelligence Department. The Engineering Department gives a training in radio engineering work and requires four years of study in the school, while the Intelligence Department gives a training for radio operators and requires two years only. Both departments are open to high school graduates.

The Chinese public is gradually showing an interest in radio broadcasting. In Shanghai, more than five broadcasting stations are rendering service to the public. Their programs consist of popular music, educational lectures and stock quotations.

Public demand for radio sets in Shanghai, Peking, Tientsin and Mukden resulted in a number of merchants going into the radio business, although the importation of radio devices is still difficult at certain ports.

The Trend of Radio Development in China

From the bare facts disclosed in this paper, it becomes obvious that China, being a large country in the Far East, can not prosper without radio business. In fact, the radio business in China has been developing rapidly during the last three or four years.

Generally speaking, the Chinese authorities have adopted different measures regarding to commercial radio communication. The Japanese have established several radio stations in Manchuria,

notably at Dairen, Shanakow and Liushutun, which exchange messages with the Chinese stations in Manchuria. It seems that there has arisen some sort of mutual agreement on these affairs.

Opposed to the former, the Nanking Government has instructed the Commissioner for Foreign Affairs in Shanghai to notify all foreign consuls-general with the following statement:

- (1) That except these radio stations already installed in the consulates, all other individual owned radio stations to be removed within a specified period of time;
- (2) That no new radio stations in any foreign consulate will be allowed; and
- (3) That radio stations already installed in foreign consulates shall transmit and receive only official messages and their time of operation and wave length shall be fixed by arrangements with the Chinese authorities.

In the opinion of the writer, the following measures should be taken up by the Chinese Government:

- (a) The China-Federal Contracts, apparently being broken, should be either officially abandoned or greatly modified.
- (b) High-power radio stations should be immediately installed and should be owned by either the Government alone or by both Government and Chinese citizens, jointly.
- (c) International traffic agreements for radio communications should be entered into with all radio companies engaged in international communications.
- (d) The radio industry should be regulated through competition; no monopoly should be permitted, except under the rights of patents, duly applied for or already issued.
- (e) Foreign concerns engaged in radio business, that is manufacturing and selling but not having commercial communications, should be permitted but should be subject to the laws of import taxation, etc.
- (f) Proper radio channels for military and navy uses, and for commercial and broadcasting purposes, should be fixed in accordance with the most up-to-date practice existing in other countries.

Nippon Kokuu Yuso K.K. (Japan Air Transportation Co., Ltd.)

THE first air transportation company in Japan is being promoted by leading financial interests. Since 1923 the Department of Communications has been considering two plans: one the establishment of air lines and the other of an air transportation company. For the latter purpose, a special committee was appointed comprising of representatives of the government and private interests, last year. The plan of the New Company is based on investigations made by this committee.

The special session of the Diet opened in May this year sanctioned the proposed subsidy of Y.19,970,000 which is to be given the new company during 11 years from 1929. The new company will be capitalized at Y.10,000,000. Of 200,000 shares, face value Y.50 a share, 34,000 shares are allocated for promoters, 46,000 shares for sub-promoters, and the balance of 120,000 for public subscription. Public subscriptions will be accepted from August 15 to 20 and the first payment will be called on October 1. General meeting for establishment is expected during the same month. They expect to begin business in April next year.

The company expects to open two regular air lines: one from Tokyo to Dairen, 2,075 kilometers, and the other from Osaka to Shanghai, 1,450 kilometers. They expect to cover the distance at 150 kilometers an hour or 13 hours 40 minutes between Tokyo and Dairen and 9 hours 40 minutes between Osaka and Shanghai.

On the Tokyo-Dairen Line there will be three stops at Osaka, Fukuoka and Keijo (Korea); on the Osaka-Shanghai Line one stop at Fukuoka. Twenty-nine airplanes will be used on these lines, with 34 spare engines: medium type land planes between Tokyo and Osaka; medium type hydro-planes between Osaka and Fukuoka; medium type land and hydro-planes between Fukuoka and Keijo; medium type land-planes between Keijo and Dairen; on the

Osaka-Fukuoka Section Hydro-planes, medium type; Fukuoka-Shanghai large type hydro-planes.

In Japan the colonies the company can use government airdromes, communication system, weather reports, etc. At Shanghai the company must establish an airdrome, wire and wireless equipment, air navigation marks, meteorological observatory, etc. at its own expenses.

There will be 12 services a week between Tokyo and Osaka, 6 between Osaka and Fukuoka, and 3 between Fukuoka Keijo and Keijo/Dairen. From the second year services between Fukuoka-Keijo-Dairen will be doubled. On the Osaka-Shanghai Line there will be 3 services a week between Osaka and Fukuoka during the first year, and only experimental hops between Fukuoka and Shanghai. From the second year the services on the first section will be doubled and on the last section 3 services a week.

Government subsidies of Y.19,970,000, to be expended in 11 years, will warrant a dividend of 8 per cent. a year, according to the prospectus of the company.

There are three sources of income: passenger, freight and mail. The special committee estimated passenger charges on Tokyo-Osaka section at Y.30, Tokyo-Dairen Y.145; freight charges at Y.1 per parcel of 1 kilogram; mail at 15 sen for letter, 7 sen for post cards in Japan. Between Japan and colonies double the charges in Japan. Charges of the Company will be based on these estimates.

The future of this company depends upon the development of sciences which ensures safety of air navigation and its increased utilization. This will increase income and expenditure can be reduced at the same time. The possible development in the process of manufacture and in the method of navigation will materially increase the durability of the machine. For the present the economic success of the enterprise depends upon the ability of the management.

Production and Industry in Korea

CHOSSEN is essentially an agricultural country, eighty per cent. of the entire population being engaged in agricultural pursuits of one kind or another. A mountainous country, like Japan, with few large plains, there is yet enough arable land not only to feed the people but also to permit of the export of a good part of its produce. Moreover, the soil, though not very fertile, is still fertile enough to support a thriving economic community if properly attended to; hence the vital importance of agricultural improvement to the welfare of Korean life, yet the great majority of the people, keeping to their old method of husbandry, paid little or no attention to this point, and it was only after the protectorate régime was established that the need for it received any serious consideration. Since then, and more especially since annexation, the utmost efforts have been put forth by the Government for the modernization of the Korean agricultural system. As the country is largely mountainous and has to support a large and growing population, though one not half so dense as that of Japan, it naturally follows that the "intensive" method should be pursued to the extreme, and that to get as much as possible from a limited space by the introduction of advanced methods must be a guiding principle of Korean agriculture.

Keeping this in view the authorities set to work toward agricultural transformation of the country, and one of the initial measures was the establishment of Model Farms. During many years, at these institutions, most of which are situated in the outskirts of country towns, experts have been conducting scientific experiments in farming, sericulture, horticulture, and stock-farming, and the results of their work were made the basis of the Government production policy as far as technique was concerned, whilst individual farmers and planters already look to those experts for guidance in the conduct of their business.

The Model Farm at Suigen was founded as a central organ in 1906 by the Residency-General, and it has branches in several of the provinces. The Farm enjoys an ideal site for an institution of such a nature and has an extensive tract of land appropriated to its use. It has been engaged from the outset in all lines of experiment and investigation of agricultural interest, and has contributed a great deal toward the promotion of agricultural development in the country.

The Chosen Agricultural Association is an important organ organized in 1906 by persons interested for the purpose of improving agriculture, and has its chief office at Keijo with members at present numbering some 3,000. It issues periodic reports, supplies special information, arranges popular lectures and competitive exhibitions, and encourages profitable enterprises. It was under the auspices of this association that a by-products exhibition was successfully held at Keijo in 1923. Since 1911 the Government has granted it a yearly subsidy to help on its development.

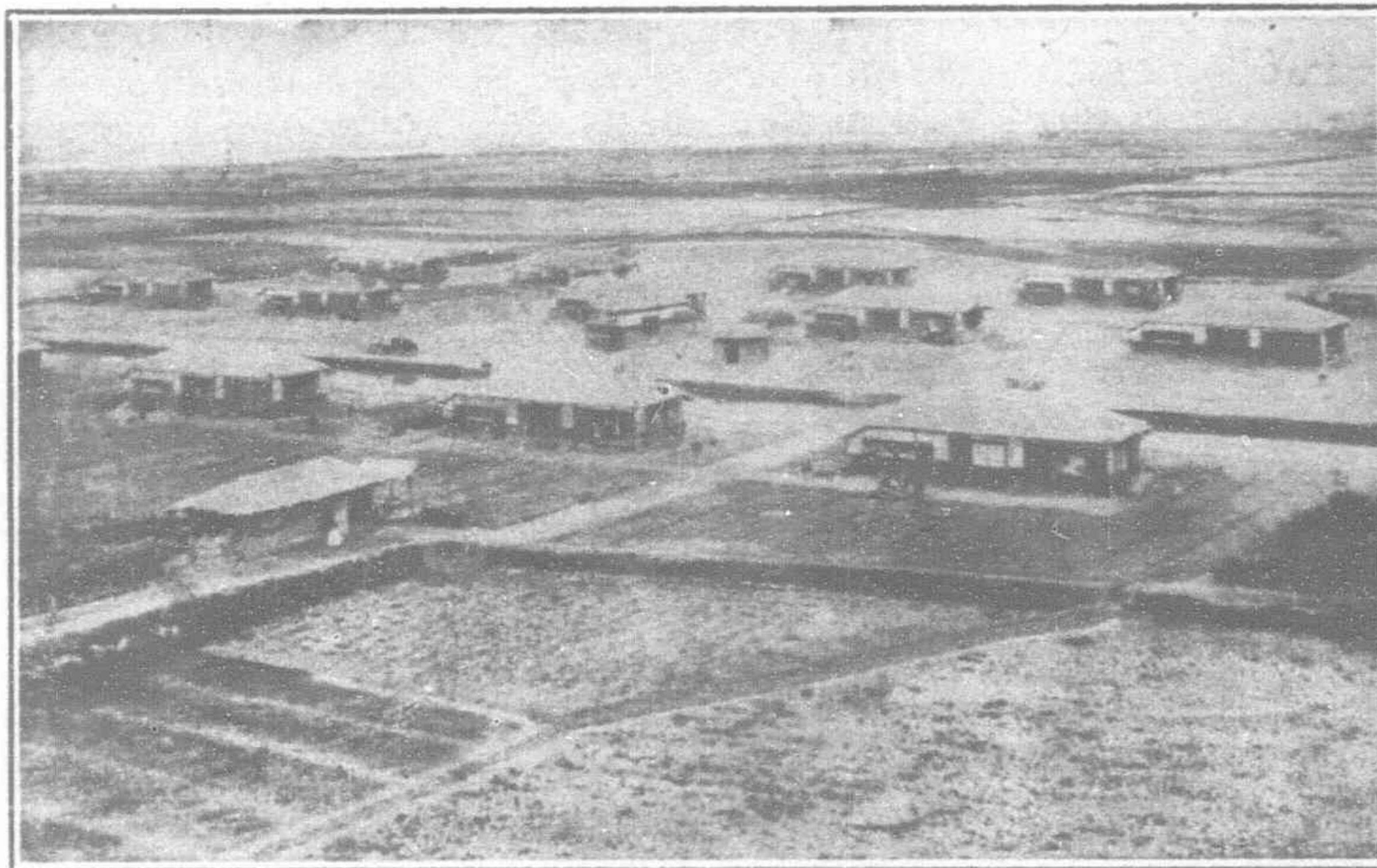
Although various local organizations existed in the country with monetary accommodation for, and co-operative undertaking of, agricultural enterprises as their object, they were unable to exercise much influence on account of poor management, so since the annexation endeavours have been made to secure improvement in them by adjusting and unifying their activities.

The total area of arable land in Chosen is about 4,470,000 *chobu*, or about 20 per cent. of its entire area, giving an average per farmer of 1.64 *chobu*. In the southern half of the country the area of paddy fields equals that of dry fields, while in the northern half the area of uplands to that of paddy fields is 5 to 1.

Though the area of uncultivated lands is not thoroughly ascertained, those alongside rivers are estimated at about 74,000 *chobu*, those along the beach at about 207,000 *chobu*, and those on the lower slopes of mountains at about 800,000 *chobu*. Since most of these lands are State-owned, regulations relating to their utilization were promulgated as early as 1907, by virtue of which such as belong to the State may be leased to those desiring to reclaim them; they also provide that they may be transferred gratis or under easy purchase terms to successful cultivators on expiration of their leases.

Until recently Chosen had scarcely any system of irrigation. In her more palmy days there existed irrigating ponds and dams in large number, but so consistently were they neglected during her era of maladministration that most of them disappeared or turned into deserted swamps. Since the entry of the Japanese into the Korean agricultural field, irrigation systems on an extensive scale have been initiated in various localities, and with the extension of reclamation works many a tract of land hitherto lying idle has been brought under cultivation. Thus, at the end of the fiscal year 1923 one-quarter of the total area of paddy-fields or about 392,000 *chobu*, was provided with irrigation arrangements. The remaining 75 per cent. depends entirely upon the rainfall, and even in a successful year produces only half the yield obtainable from well-conditioned land. This fact accounts for the encouragement of irrigation works being vigorously pursued.

In July, 1917, new regulations relating to irrigation associations were promulgated for the better conduct of irrigation, drainage, reclamation of waste land, etc. As many of them, however, found it difficult to do without financial aid, special regulations were issued in 1919 for subsidizing their works. Later on, under the revised regulations issued in 1920, the subsidies for land-improving enterprises were augmented, the amount ranging from 20 to 30 per cent. of the cost according to the kind of work to be done, and at the close of the fiscal year 1923 the number of associations actually in working order was 41, operating over an area of 46,000 *chobu*, while 14 others

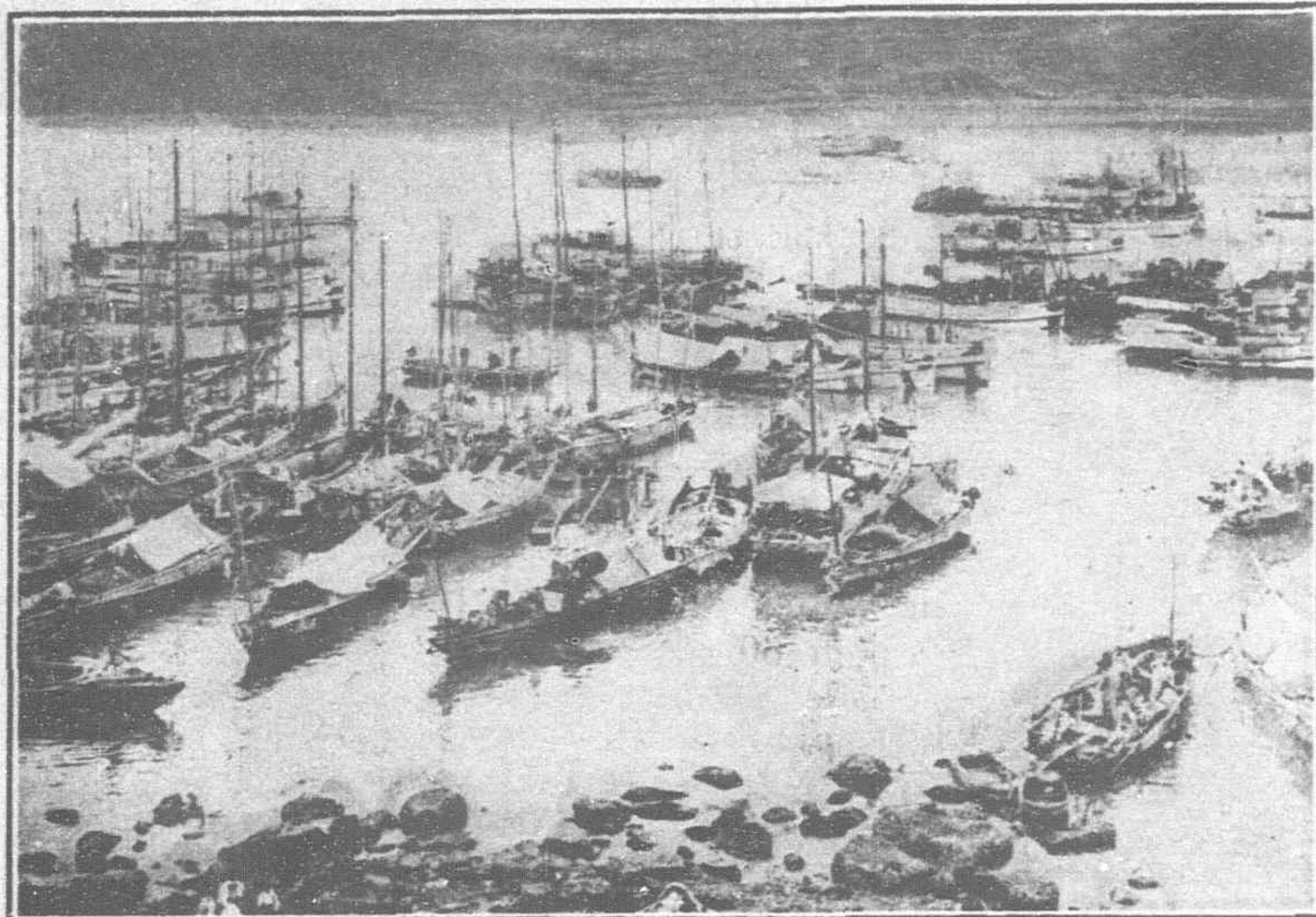


Fuji Village Near Kunsan (Farm Settlement of the Fuji Industrial Company)

were actively engaged in construction works designed to serve an area of over 30,000 *chobu*, the total expenditure on all these enterprises at the end of the same year amounting to over Y.41,000,000. There still remain many tracts of land marked out for improvement, covering an area of 230,000 *chobu*.

To secure increase in the yield of rice, the Government drew up a programme to be executed in 15 years beginning with 1920, and work on it is well under way. This aims at the improvement of at least one-half of the total area of uncultivated lands amounting to 800,000 *chobu*. To carry out the scheme, it was necessary first to make basic investigation of those lands to be converted into rich paddy-fields by means of irrigation and reclamation, so that the scope and scale of work on them could be properly determined, and in pursuance of this, bands of special experts have been detailed to the provinces since 1920, and the area actually covered by them up to the present is roughly 6,930,000 *chobu*.

Irrigation appeals to the common interest of agriculturists and visibly illustrates the facilities afforded by irrigation associations, so the Government has always encouraged their formation, but owing to the impossibility of their being in a position to serve the whole of the arable land in any immediate future it has had to permit of the existence of private undertakings. Since these works affect people in various economic ways, it is provided that official permission must be obtained before starting work, and the number



Fishing Center Near Toei

of applications so far granted is 166, covering an area of 11,000 *chobu*.

One of the great difficulties now facing Japan is that the demand for and supply of provisions in Japan have lately ceased to maintain an easy course by sheer reason of over-population. To meet the situation, the authorities have been tireless in encouraging increased production of rice and other cereals in Chosen, with the result that the total volume of Korean rice exported in 1923 was nearly five times that exported in 1910, the first year of the present régime.

This increase was largely due to improvement in the varieties grown and in the method of cultivation. As mentioned above, the Government, pursuing a positive policy aiming at increased production of rice through extension of irrigation and reclamation works, drew up a 15 year programme for 1920 onward at an estimated expenditure of Y.120,000,000, of which the sum of Y.38,500,000 was earmarked as subsidies for land-improving enterprises. A Land Improvement Office was then formed in the Industrial Bureau with an adequate staff of men to take sole charge of the work.

When this programme is fully executed, the production of Korean rice will be increased to a considerable degree, and the export of it, too. Such a result, it is confidently expected, will greatly help solve the food-supply question in Japan and as greatly enrich the economic life of Chosen.

Along with advance in the production of rice, official inspection of rice destined for export became necessary, so that transactions in it might be creditably conducted, and in 1915, regulations for the purpose were promulgated, but these were revised in 1917 and again in 1921, by virtue of which the standard of the inspection system was raised and exportation of rice of inferior quality prohibited. Regulations relating to soja-beans were also enforced in the same manner. In this way the quality of the rice and beans produced in Chosen has been markedly improved, and they now enjoy high credit in the Japanese market.

Agricultural Production

Agriculture in Chosen has of late developed so appreciably that the total value of the crops in 1923 amounted to Y.1,170,000,000, of which Y.198,000,000 was exported, mostly to Japan, forming 70 per cent. of the total value of the export trade, and these items, when compared with 1910, the year of annexation, show about a fivefold advance in the former and a sixteenfold one in the latter. As in most other countries, by far the largest part of the arable land in Chosen is devoted to the growing of grain and pulse, of which the principal are rice, barley, wheat, soja beans, and millet.

Rice is the most important of all agricultural products. Its annual production, after having provided for all domestic needs, furnishes the largest and an ever-growing item in the export trade. In 1910 the area of rice-fields amounted to 1,350,000 *chobu*, yielding a crop of 10,400,000 *koku*, rising in 1923 to 1,550,000 *chobu* and yielding 15,170,000 *koku*, its export during the same period making even greater increase from 780,000 *koku* to 4,070,000 *koku*. Such progress was made possible by the improvement introduced in the

method of cultivation, in the selection of seeds and manure, and in irrigation and reclamation.

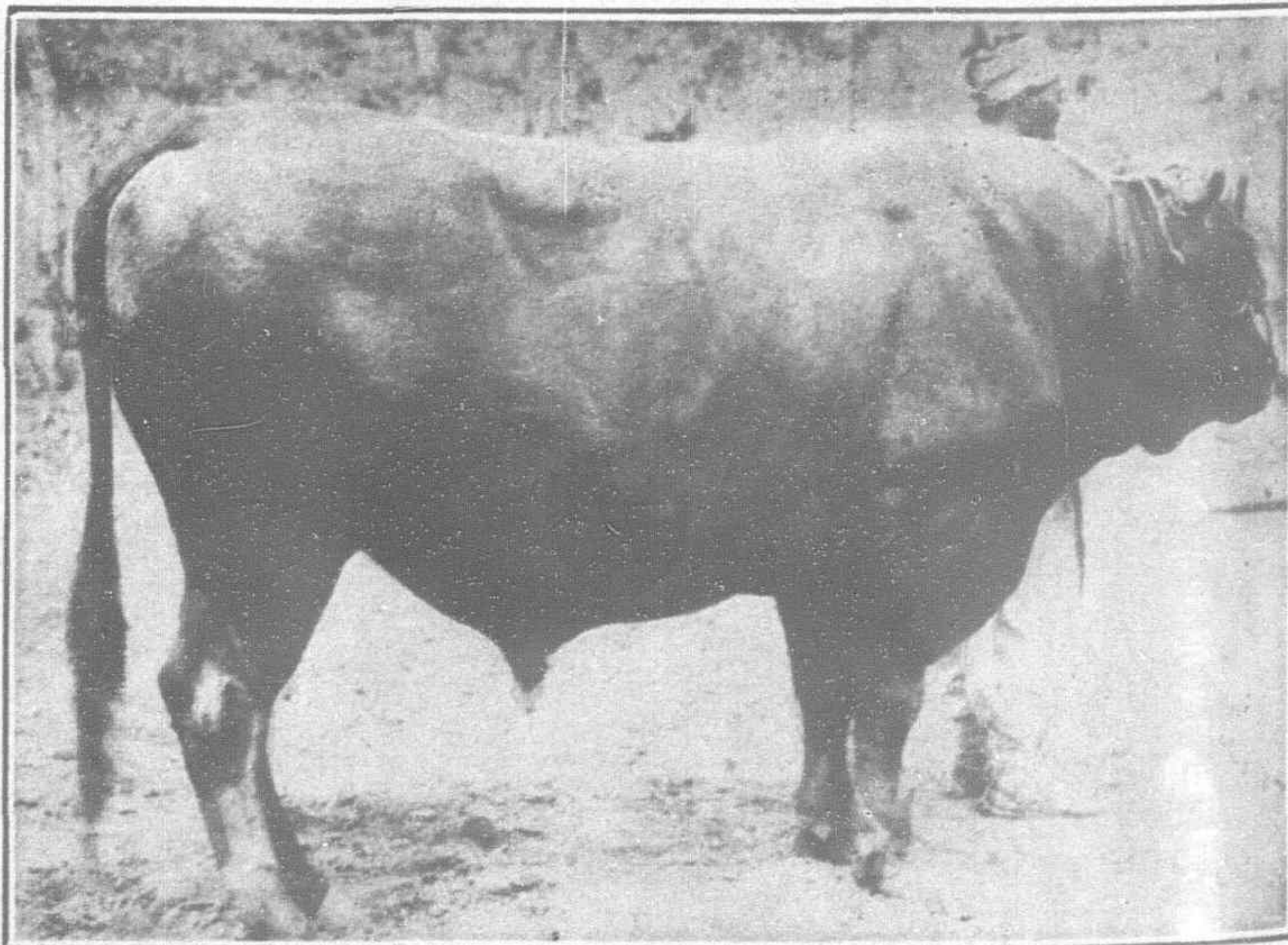
Barley and wheat are chiefly cultivated for home consumption. They are all autumn grown, and in the southern provinces, where irrigation works are common, are often raised in the paddy-fields after the rice is harvested. As the result of encouragement of their cultivation, coupled with improvement in the use of economical fertilizers and prevention of the presence of noxious insects, the area thus made to yield two staple crops a year increased from 126,900 *chobu* in 1912 to 280,000 *chobu* in 1923. Further, taking the country as a whole, the area under both grew from 857,000 *chobu*, producing the total crop of 6,200,000 *koku* in 1910, to 1,224,500 *chobu* yielding 8,050,000 *koku* in 1923.

The soja bean ranks next to rice in importance as an article of export. Though, owing to reckless methods of preparation, such as drying and assorting, the bean was at one time unable to gain any extensive outside market, it is now in high esteem in the home market through the adoption of measures for thorough improvement in quality. The destination of its export is mostly Japan, as in the case of rice, where it is used not only for food but also for chemical industrial purposes. In 1923 the area under the bean was over 805,000 *chobu* producing 4,640,000 *koku*, while its export reached 1,280,000 *koku* valued at Y.21,760,000, representing an increase of six times in area, seven times in yield, and two and four times in volume and value of export as compared with the year 1910.

Cotton has been cultivated in Chosen from very early times, yet until quite recently the production was barely sufficient to cover domestic needs. It was only through the efforts of the authorities that real progress was witnessed in this important branch of agriculture. In 1906 a cotton-plantation was started in Mokpo to carry on the tentative cultivation of American cotton. The superiority of it over the native species being fully demonstrated, its cultivation was assiduously encouraged in the south, the result being that the area under it advanced from 1,200 *chobu* producing 660,000 *kin* in 1910 to 109,600 *chobu* yielding 9,680,000 *kin* in 1923. Thus, plantations under cotton of both native and foreign origin throughout the peninsula advanced from 60,000 *chobu* yielding 21,000,000 *kin* in 1910 to 158,800 *chobu* yielding as much as 127,500,000 *kin* in 1923. Along with increase in production, export of it is also on the steady growth. This is very welcome since Japan is badly in need of cotton for her ever-extending textile industry.

As for the sugar-beet, experimental planting of it was started in 1906. Having obtained satisfactory results, its cultivation has since been encouraged with the aid of subsidies for distribution of improved seeds. Experiments carried on by experts for a number of years prove that Heijo and district are best suited for the growing of sugar-beet, and the area under it in 1923 reached 826 *chobu* with a production amounting to 9,250,000 *kin*. In 1920 a sugar-factory was established at Heijo by the Japan Sugar Manufacturing Company as a pioneer plant of its kind in the country.

Fruit-growing in Chosen has a bright future owing to the specially favorable climatic conditions of the land, but the native species usually grown are not of particularly good taste and flavor,



Korean Cattle for Breeding

so improved species have been extensively introduced and distributed. To this pursuit the horticultural station at Tokuson, about five miles from Keijo, was exclusively devoted, though experiments in the same line were carried on in other places, and the apple, pear, and grape-vine were found to be most promising. So encouraging were the results obtained by those interested that many orchards have sprung up in the various districts served by the railways, and Korean fruit has now become an important item of export with an increasing demand for it in Japan and elsewhere.

Sericulture

Sericulture in Chosen is a family industry, and, for the most part, is carried on as a side-line. The Korean climate and soil are highly favourable for the raising of silkworms, but not much progress was ever made in this line, as the species reared were of inferior kinds, while the method of rearing them was very primitive, and the cultivation of mulberry trees on whose leaves they feed received little if any attention. The Government since 1910 has employed every appropriate means to secure thorough improvement in both quality and quantity of cocoons, and regulations were issued in 1919 to provide for the examination of egg cards, prevention of diseases, care of mulberry seedlings, etc., and institutions necessary for the encouragement of this profitable business were established in the provinces. The result of all these efforts is already evident in the greatly advanced condition of the industry. The number of families engaging in sericulture in 1910 was calculated at 76,000 and the volume of cocoons gathered at 14,000 *koku*, but in 1923 the figures were 402,000 families and 208,000 *koku*, while the volume of cocoons exported to Japan increased to 87,000 *koku* valued at Y.7,330,000.

Reeling was formerly done at home by means of simple implements and for home consumption only, but of late years the development in sericulture has induced the use of modern machines, and reeling-mills now number five with an aggregate yearly output of raw silk amounting to 54,000 *kwan* valued at Y.7,560,000, all intended for export. On the other hand, hand-reeling is still quite common in the country and employs 33,000 families turning out a total production of 17,000 *kwan* valued at Y.1,670,000.

Stock-farming

Cattle, raised everywhere in the peninsula, are indispensable to Korean farm-life, for they supply the greater part of the labor required on a farm. Korean cattle are generally of hardy constitution and gentle disposition, while their flesh is very palatable, so they are highly valued as a source of both labor and food. Of late, in consideration of the greater demand for them in Japan as well as in Manchuria and Siberia, various means have been employed by the authorities to help on development in cattle-breeding, for which the land offers many advantages, and with such good effect that cattle advanced in numbers from 700,000 at the end of 1910 to over 1,800,000 at the end of 1923, while the number exported increased from about 20,000 to nearly 60,000.

In wide contrast to the cattle, the native horse is very small and poor, averaging less than four feet in height. With the object of making a new variety most suited to the Korean climate, the authorities are now trying cross-breeding between Mongolian mares and Japanese stallions, and the work is chiefly carried on at the horse-farms at Rankoku in Kogen and Yuki in North Kankyo.

Sheep were formerly almost unknown in Chosen, though goats were kept by some people, but in 1914 a sheep-pasturage was established at Sempo, Kogen Province, and sheep to stock it were imported from Mongolia. Since 1919, cross-breeding between Mongolian sheep and breeds of foreign origin has also been carried on there, while a number of sheep have been distributed among farmers that they may assist in the work. Judging from the results

so far obtained at the pasturage, sheep-breeding in Chosen seems to have some prospects before it.

As for pigs and poultry, their improvement has been fostered by import from Japan of superior breeds, and at the end of 1923 the former totalled 1,170,000 and the latter 6,090,000, both nearly double the number kept at the time of annexation.

Cow-hides constitute one of the principal exports. Korean cattle furnish an excellent hide because of its large size and fine grain. The only drawbacks to its credit lie in the manner of peeling and drying, and in the presence of abrasions caused by rough treatment, but the adoption of new methods of preparation since 1911, together with the prevention of saddle-gall, has led to great progress in the art of preparing the hide for tanning, and at the present time the total output of cow-hides amounts to 5,000,000 *kin*, of which 60 per cent. is quite free from blemish. The tallow, bones, gristle, and hair, formerly thrown away as refuse, are also being increasingly utilized.

Forestry

There is no nation in the world which prospers without paying due regard to forestry. In spite of this self-evident truth, the forests in Chosen were long left untended or abandoned, so that good forests, chiefly found in remote mountainous regions, now occupy only one-third of the total area of forest lands covering more than half the entire peninsula, and the remaining two-thirds is but thinly wooded or entirely denuded. Even those forests still standing and left to take their own course show signs of decay with increasing age, while on the other hand the demand for timber for building material, fuel, pulp, etc., is growing greater each year, so the Government is doing all in its power to secure their permanent conservation and cultivation, besides trying to prevent the reckless deforestation long resorted to by the people at large.

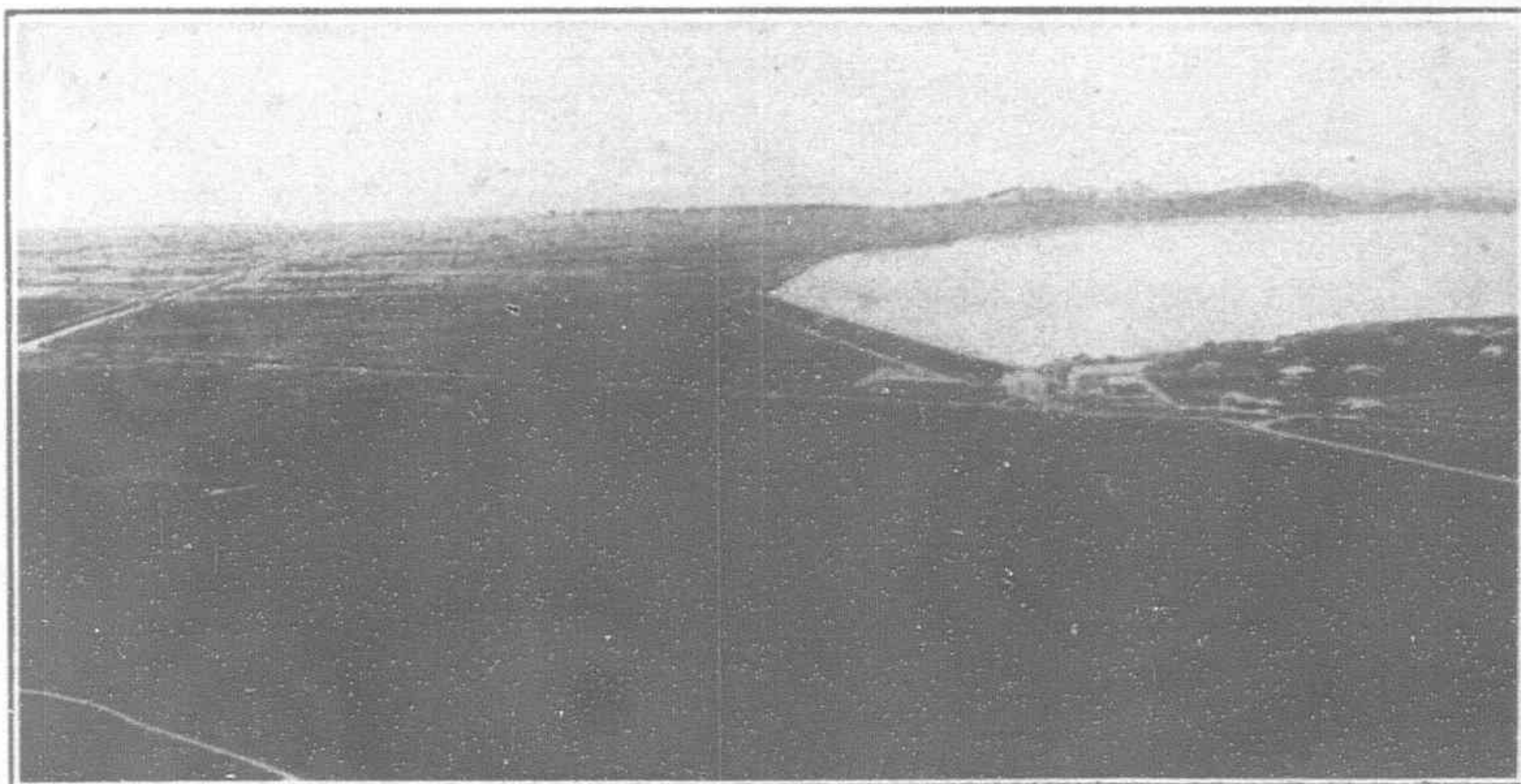
Throughout the country many varieties of plants belonging to both temperate and frigid zones are present owing to the wide difference in climate and soil between the north and south. For instance, in the basins of the northern rivers, the spruce, birch, larch, etc., are to be found, and in those of

the central and southern part the red and black pine, oak, alder, bamboo, etc. The Korean flora is exceedingly rich in varieties, and the fact that there are as many as 700 of them shows how favored the land is by nature for afforestation on the very widest scale.

Formerly no system existed in Chosen for the care and management of forests, of which 80 per cent. was State-owned, and the people enjoyed full freedom to exploit all except forbidden forests, but even these were found less inviolable toward the latter days of the old régime, bringing in its train unscrupulous felling of trees, with the result that destruction of forests went to the extreme. In 1908, the Korean Government, acting in conformity with Japanese advice, promulgated a forestry law to make it the basis of forestry administration, but after annexation a new law was issued, providing among other things that State unreserved forest lands may be leased out for the purpose of afforestation and ultimately transferred to those successfully accomplishing the work, and the area of lands thus leased now reaches 810,000 *chobu*, of which 30,000 *chobu* has already been transferred to successful workers.

Though general investigation of the forests in the country was made at the time of annexation, many cases remained in which no clear line of demarcation was drawn between State-owned and private forests, and this led to perpetual litigation, so under the new provisions of 1910 local offices were charged anew with investigation of all existing forests for the settlement of their ownership and boundaries, and a committee was specially formed to decide appeals against the awards of local investigation.

The first step taken toward afforestation was the creation of model forests in 1907 on the hills near Keijo and Heijo, fol-



Improved Paddy-fields Near Kunsan

lowed later on by similar undertakings near the towns of Suigen, Kaijo, and Taikyū. In recent years re-clothing of denuded woodlands around large centers has been taken up extensively to prevent sanddrifts and to afford a future supply of timber, and the area so covered at State expense up to 1923 totalled 11,000 *chobu*, and the number of seedlings planted 22,000,000.

The first afforestation maintained at local expense was started in Kogen Province in 1911, and the example being followed, all the provinces are now engaging in the work, the total area afforested up to 1923 reaching 3,750 *chobu* and the number of seedlings planted 16,960,000.

Afforestation under private management has also made rapid progress of late years, and the aggregate number of young trees planted up to 1923 amounted to 144,590,000 over an area of 49,300 *chobu*. Among those engaging in the work on a large scale may be mentioned the Oriental Development Company, Mitsui, Sumitomo, Yamashita, Z. Handa, K. Tagi, Katakura, Nakamura-gumi, etc.

In connection with the model farms mentioned, three public nurseries or seedling plantations were started in 1907, and more being formed each year they numbered 77 by the end of 1923. The principal seedlings raised at these places are the pine, oak, chestnut, poplar, larch, etc., and at first distribution was made gratis to people interested. In 1923 those maintained at national expense covered 66 *chobu* in area, raising about 5,000,000 seedlings, and those at local expense 165 *chobu*, raising over 18,000,000 seedlings, while private undertakings accounted for over 153,000,000 seedlings covering an area of 904 *chobu*. Besides, every possible opportunity was seized by the authorities to arouse the interest of the people in afforestation, and to cultivate in them a love for trees. Schools were provided with lands on which to plant trees, and the 3rd of April, anniversary of the death of the first Emperor of Japan, was fixed upon as Arbor Day, on which day universal plantation is encouraged. Thanks to all these measures, many mountains and hills once bald and dreary-looking have begun to present a refreshing greenness.

On the other hand, scientific examination and investigation of forest plants being necessary for the improvement of forestry on a sound basis, work along that line carried on since 1913 was much enlarged in scope and more experts were engaged, and in 1922 an experimental forestry station was established in a suburb of Keijo to take charge of the work in a more systematic way.

Among the few forest districts spared the ravages of wholesale deforestation, the most important is the one along the upper reaches of the Yalu and Tumen Rivers on the frontier. The first systematic exploitation of it began in 1906 when a joint institution by the Japanese and Korean Governments with a capital of Y.1,200,000 was formed for the purpose. This was the origin of the Lumber Undertaking Station which, together with a similar joint enterprise of Japanese and Chinese on the other side of the Yalu, forms one of the largest suppliers of timber in this part of the world. The Station is provided with nurseries of its own, so that as trees are felled new ones may be planted in their stead. The timber felled is mostly rafted down to the lumberyard at Shin-gishu, where it is sawn and sold, the profit from the undertaking going to the Treasury.

Fishery

Girdled on three sides by water, with a coast-line measuring more than 10,000 miles, Chosen is favorably situated for the development of her fishery. Especially are her waters full of life owing to the presence of innumerable islands and indentations of the coast, as well as to the great influence of both warm and cold currents washing her shores, and the principal varieties of fish

already known number some 84. But these natural advantages were almost wasted on the native fishermen who knew but little of modern methods of fishing. Since the establishment of the present régime, improvements have been introduced into fishing boats, gear, and methods, and encouragement given in various forms for the enhancement of marine production, so that the value of catches, which was only Y.8,000,000 at the time of annexation, rose to Y.51,700,000 in 1923, and that of prepared aquatic products during the same period increased from Y.2,660,000 to Y.29,600,000.

The first law for fishery was published in 1909, and was replaced with a new law in 1912, providing for the security of exclusive fishing rights over a certain area of water, the prohibition of certain acts prejudicial to fishing in protected areas, the granting of permits to applicants according to custom as far as possible, and the prevention of individual monopolization of any fishing ground. The law was accompanied by regulations for the protection and control of fishery, placing some restrictions on the manner, season, and place of fishing, prohibiting trawling within specified zones in Korean seas, and limiting the number of whaling boats and diving apparatus. Steps were also taken to suppress the Chinese poachers appearing on the western coast, thus rendering their visits far less frequent than formerly.

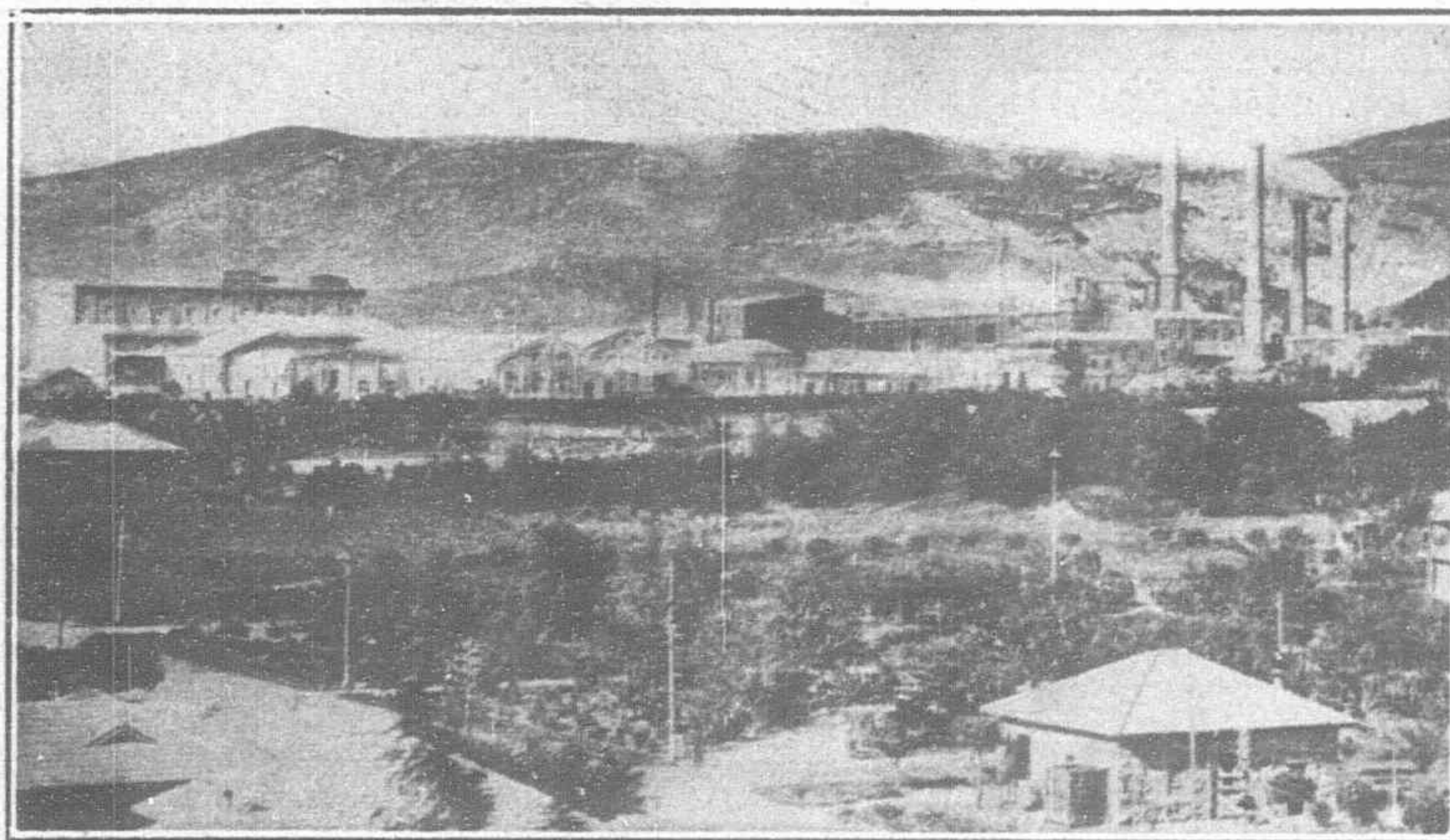
The first aquatic investigation was undertaken by the authorities in 1912 with regard to distribution of Korean fish, their movements, reproduction, and season of visits, suitability of methods employed in catching them, preparation of salted and dried fish for export, and artificial culture of certain kinds of fish and sea-weeds, and in 1922 a central organ called the Fisheries Experimental Station was established at Fusan in order to carry on the work more systematically. These and other efforts toward improvement of the fishing industry in the country have already been productive of good results. Nothing, however, has contributed more to the recent progress of Korean fishery than the increased immigration of skilled Japanese fishermen, by whom the native fishermen have been taught to engage in deep sea fishing—a new profitable venture for the Koreans, their activity having

up to then been confined to off-shore and inland waters.

With a view to promoting common interests among local fishing communities, regulations were promulgated in 1912 authorizing the formation of fishermen's associations. These associations increased year by year until they reached 126 in 1923 with a combined membership of over 48,000, and their joint activities consisted in the purchase of fishing tackle, sale of fish, advance of funds, lending of boats, equipment of alarms and signals, arrangement of mooring places, etc. All are making good under the supervision and guidance of the authorities, and not a few are assisted financially by the Government.

As early as 1900 an association was founded at Fusan by fishing parties coming from Japan for protection of their business, and gradually extended the scope of its work to include the entire peninsula, but in 1912, on the enforcement of the new fishing law, some change was made in its constitution to permit of Koreans becoming members and it enjoyed an annual subsidy from the Government. It then remained unchanged until 1923, when it was reorganized under the new regulations, and a Chosen Fisheries Association was formed in Keijo as a central institution with a similar institution in each province. The association engages chiefly in such works as rescue at sea, free medicine for the sick, inquiry into fishing conditions, guidance of fishermen in their business, etc., and has over 100,000 members in all.

As referred to, the marine products have increased each year through the improved means of fishing, exploitation of new fishing grounds, and increased efficiency of the fishermen themselves,



Onoda Cement Factory, Heijo

and in the following table are given those amounting in value to over a million yen according to the statistics for 1923 :

Mackerel	..	..	..	..	..	Y.7,260,000
Sardine	..	..	..	..	..	6,040,000
Alaska Pollack	..	..	..	..	..	4,110,000
Sciaena	..	..	..	..	..	3,010,000
Herring	..	..	..	..	..	2,720,000
Sea-bream	..	..	..	..	..	2,320,000
Cybiun	..	..	..	..	..	2,300,000
Cod	..	..	..	..	..	1,940,000
Plaice	..	..	..	..	..	1,630,000
Hair-tail	..	..	..	..	..	1,490,000
Horse-mackerel	..	..	..	..	..	1,350,000
Yellow-tail	..	..	..	..	..	1,170,000
Laver	..	..	..	..	..	1,390,000

Mining

The Korean peninsula is rich in minerals of various kinds, but this natural wealth, like a hidden treasure, remained untouched for a long time, and when touched at last it was mostly by foreign hands. Foreign mining activity in the peninsula dates back to the year 1896 when an American citizen named James R. Morse took the initiative in securing a concession covering Unsan Mine, and the example being followed by people of his own and other nationalities, most of the gold mines at the beginning of the present century were in the possession of foreign concessionaires.

But the mining administration in those days was in bad shape. While mines were nominally under the Government, concessions were often freely granted by the Imperial Court. In some cases a concession given at one time was revoked at another and wantonly bestowed on another party, and even the imposition of taxes depended upon the caprice of the authorities. So, following on the establishment of the protectorate régime, a mining law was promulgated in July, 1906, and the mining administration in the country became unified and consolidated. Though the law continued in force after the annexation, it was soon found that it was not in accord with the changed times, and the present mining law was framed and enforced in 1916. The new law ordained that a mining right could only be granted to Japanese citizens or to corporations created under the Japanese law, and the minerals subject to its provisions were increased in number from 17 to 29. With regard to mining permits, the principle was adopted, except for certain reserved localities, of awarding them according to priority of application filed with the authorities, and the mining right being treated in the same manner as real estate it had to be confirmed by legal registration. The use and expropriation of land necessary for mining purposes were then determined, while other provisions were made to meet several other mining conditions. At the same time the mining right already secured by foreigners under the old régime was strictly respected and was made valid and heritable by other foreign individuals or corporations having their head office in Chosen. Toward the end of 1921 revision was made in the existing law so as to extend the scope of mining claims.

Of Korean mineral products, gold occupies the most important place, and the most noted gold mine in the country is Unsan Mine operated by an American syndicate called the Oriental Consolidated Mining Company. Next to it come Shojo Mine worked by Frenchmen, Suian Mine by Englishmen, and Shokusan Mine by Japanese and Americans.

Formerly the mining industry in Chosen was conducted in a primitive way except where certain foreigners were concerned, so the Government tried to induce Japanese mining firms to invest funds in Chosen and start undertakings, but it was not until after the annexation that Japanese began to play an important rôle in the Korean mining field. In fact, their activity dates only from the year 1911 when some Japanese capitalists, who had held back on account of the unsettled state of the peninsula, at last entered the arena, and the gold fields, so far known, being already occupied by men of other nationalities, turned their attention to other directions, principally iron and coal. Chief among the enterprises thus initiated may be mentioned the smelting plant of the Kuhara Mining Company at Chinnampo, the ore-dressing factory of the Japan Metal Company at Roryoshin, and the iron-foundry of the Mitsubishi Iron Company at Kenjiho.

Nearly every kind of useful mineral, except sulphur, petroleum, and asphalt, is to be found in plenty within the country, especially gold, iron, anthracite, and graphite. During the European War the mining boom in the country was such as was never experienced before, but the post-bellum economic situation caused considerable reduction in the demand for Korean mineral products, and led to the closing down of mines in rapid succession, with consequent decrease in the output of minerals. However, prices and wages, both soaring high while the rush was on, have lately shown a tendency to drop, and this naturally reacting on the cost of production, the mining business in Chosen has again taken on a forward movement. In the following table is given the production in value of the principal minerals in recent years as compared with that at the time of annexation.

Mineral	1923 Yen	1922 Yen	1921 Yen	1910 Yen
Pig Iron	5,684,112	5,055,129	4,819,843	—
Coal	2,750,214	2,531,436	3,192,262	388,781
Gold	3,914,421	3,293,083	2,992,021	3,744,957
Iron Ore	1,806,055	1,153,224	1,716,170	421,462
Concentrates	1,626,579	1,145,481	1,489,182	246,631
Gold and Silver Ore	590,215	543,223	587,412	262,992
Placer Gold	336,932	321,652	359,260	821,609
Graphite	258,215	295,760	208,902	153,477
Silver	55,045	45,020	4,775	6,555
Copper Ore	2,378	4,481	17,986	21,488
Others	302,728	115,202	139,412	—
Total	Y.17,326,894	14,503,781	15,537,225	6,067,952

Commerce and Manufacture

From olden times it has been customary among the Koreans to sell and buy at markets periodically held in various important towns, and even to-day the greater part of the internal trade is carried on in this manner. A market is, as a rule, opened every fifth or sixth day, and on that day people come together from far and near to get their supplies of food, clothing materials, cattle, and other necessities of life. Such markets at present number more than 1,200 throughout the country, and their annual transactions amount to over Y.120,000,000. Though in recent years shops have become quite the fashion in the larger towns, the markets still constitute an important element in Korean commercial life, and some of them have a national fame, like the medicine market in Taikyu and the cattle market in Suigen.

This system of trade, which was undoubtedly called into being by necessity, has of course its own merits and demerits, and when properly regulated and protected, contributes much to local economy. So in September, 1914, regulations for markets were finally published, providing in detail for their formation, management and supervision. But things are running their course, and with the growing influence of modern shops the market system is gradually giving way to a more advanced form of doing business.

Spot markets, so-called, carrying on transactions by description or by showing samples are held daily, and are subject to strict Government control. Up to the end of 1923 permission had been given for the establishment of two in Keijo and one each in seven other centres, or nine in all, of which the one incorporated in Keijo deals in securities, the others in grain only.

Among the measures taken toward improvement in the commercial and industrial systems in the country may be mentioned the enforcement in 1911 of specific regulations for business companies, subjecting all to licence by the authorities, thereby preventing the establishment of illegal or bubble corporations. Owing, however, to the advance made in the economic power and idea of the people at large, these regulations are abolished in 1920, that more freedom might be enjoyed by those starting companies, joint-stock or otherwise, except exchanges and insurance companies, both of which being of a different nature from other undertakings were left subject to the old provisions. Many companies have since come into existence with the general growth of industry, and at the end of 1923 those having their main offices in Chosen numbered over 900, showing a remarkable advance since the annexation when there were only 150 of them. Classified according to the

objects for which they were founded they make the following showing :

	1923	1920	1911
Agriculture and Forestry ...	62	49	12
Commerce ...	324	157	76
Manufacture ...	220	135	27
Fishery ...	23	23	1
Mining ...	7	7	1
Banking ...	99	44	19
Transportation...	83	81	19
Gas and Electricity ...	26	20	7
Others ...	76	28	—
Total ...	920	544	152

In order to portray to the general public the business condition of Chosen and to stimulate her development industrially, a commercial museum was established in Keijo in 1912, and later on a museum of local products in every province. For the same purpose exhibitions were often held in Keijo and elsewhere, and exhibitions in Japan were also made use of by exhibiting Korean products in them to as great an extent as possible. In 1915, regulations for Chambers of Commerce were issued, whereby separate chambers for Japanese and Koreans were no longer allowed, and only one with a joint membership of both peoples was permitted to exist in any one centre. These organs now number nine, all situated in the principal towns.

Another important factor to which the commercial development of the peninsula was directly indebted, was the standardizing of weights and measures. As they had for long no definite standard, entailing a great deal of trouble and uncertainty in business life, a radical reform was at last effected in them in September, 1909, by making their units and denominations identical with those current in Japan, and at the same time the manufacture of them was made a Government monopoly to ensure uniformity in the instruments in use, but it took nearly three years to bring the whole country into line with the new system.

Commerce in Chosen after the annexation started on a new career, especially during the European War, though it received a set-back in 1920 owing to the post-war reaction. In the following table is given a general idea of the recent commercial development in the country.

	Value of Exports 1,000 Yen	Value of Imports	Value of Bills Cleared
1923 ...	261,665	265,790	846,301
1922 ...	205,752	215,338	935,863
1921 ...	207,280	205,210	852,053
1920 ...	191,958	238,956	849,296
1919 ...	219,665	280,786	962,408
1910 ...	19,913	39,782	20,489

The Koreans of old were excellent artists and workers in weaving, ceramics, and metal casting, and that these arts once attained a high degree of development is evidenced by the many excellent works still left, chiefly in the form of domestic industry. On the advent of the present régime, therefore, efforts were put forth to revive these ancient arts, as well as to introduce modern mechanical arts, and one of the first steps taken to that end was the establishment in Keijo of an up-to-date technical school in 1909, followed by the erection of a Central Laboratory in 1912 for the exclusive conduct of scientific experiments in connection with all branches of Korean manufacturing industry.

The manufacturing industry, though still in its infancy, has made such advance since 1916, being favorably influenced by the European situation, that the total value of manufactured articles, amounted to over Y.257,000,000 in 1922, this being about fifteen times as large as that for 1912, in which year they were valued at Y.17,000,000. Chosen holds out promise for great development in manufactures, as she has a large supply of material and labor—two factors most favorable to the expansion of industrial interests—so that with sufficient capital and the equipment of modern factories Chosen can hardly fail to become an important industrial country in the world.

Except for some few run by Japanese and foreigners, factories on modern lines were practically non-existent in Chosen prior to the European War, but the abnormal conditions induced by

that great event quickly brought about a change, and in 1922 the number of factories, only 151 employing 8,200 hands in 1910, increased to 664 employing about 50,000 hands, while those capitalized at a million yen or more numbered over 30.

The most important manufactures are (1) cotton, hemp and silk tissues, the total value of their output increasing from Y. 5,000,000 in 1911 to over Y.22,000,000 in 1922, though the demand for them is still largely met by import, this also advancing from Y.12,000,000 to Y.53,500,000 during the same period. While the larger part of the raw cotton is still exported to Japan, owing to the absence of skilled workers and capital, cotton manufacturing was started on a large and systematic scale by the Chosen Spinning Co. at Fusan in 1922 ; (2) paper, production of which increased from Y.382,000 in 1911 to Y.2,400,000 in 1922, is mostly of home and hand make. Of late years the demand for foreign papers has grown considerably, the total value imported rising from Y.800,000 in 1910 to Y.4,000,000 in 1922 ; (3) ceramics, for which the Onoda Cement Co. started a branch establishment in Heijo in 1919, followed later on by the Japan Pottery Co. at Fusan, has a yearly output valued at about Y.3,000,000 ; (4) saké, the demand for which is increasing with the growth of the Japanese population in this country, increased in production from Y.740,000 in 1911 to Y. 5,160,000 in 1922, while import from Japan still amounted to Y.1,760,000 ; (5) metal works, formerly consisting of crude articles for daily use, are now being produced on a larger scale to the yearly amount of over Y.10,000,000, but the annual import still averages ten million yen ; (6) leather, this industry, though with an output of only half a million yen, looks very promising, several tanyards having been established in the country, the chief among them being the one at Yeitoho ; (7) matches, while having good prospects in the future, their manufacture is not as yet in a position to meet even one-quarter of the home demand, the output in 1922 being only Y.310,000 ; (8) sugar, the manufacture of this article was started in Heijo by the Japan Sugar Co. in 1920, and the output of it amounted in value to Y.4,240,000 in 1922 ; flour, vegetable oils, floor-matting, etc., are also worthy of notice as being among the country's profitable industries.

Tin Dredging Industry in the Far East

We are frequently asked as to the actual number of dredges at work, under construction, and under order in the Eastern tin-fields at the end of last year. Such estimates as have appeared usually take account only of the Federated Malay States, but account should also be taken of the position in Siam and Burma, and we have recently had access to figures prepared by a leading tin firm in the East which indicate that the magnitude which the tin dredging industry has assumed is apt to be under-estimated. This table is as follows :

	Dredges at Work.	Dredges under Construction.	Dredges on Order.	Total.
F. M. S. ...	72	21	23	116
Siam ..	17	13	8	38
Burma ..	6	3	1	10
Total ..	95	37	32	164

It will be understood that these figures represent the position as closely as could be ascertained on December 31 last, and take no account of additional undertakings announced since, such, for instance, as the installation of a "fleet of dredges," the equipment of which was announced at the Anglo-Oriental meeting on May 23 last for the Lower Perak Tin Dredging, Ltd., nor does it take any account of dredges which may be installed in the Netherlands Indies. These figures should be of particular interest to British dredge builders, for even if the contracts for some of them are placed locally the machinery is bound to be imported, and the high reputation of British workmanship gives the manufacturers in this country an undoubted advantage in that first cost is admitted to be a very minor consideration compared with the freedom from delay which any interruption in regular running always renders exceedingly costly, even if it can be rectified eventually. The experience of the Rahman Hydraulic Company, whose circular has been published this week, sufficiently illustrates the troubles which can ensue from a plant proving unequal to its expected performance.

Old Port of Macao Institutes Modern Improvements*

Trade Commissioner A. Viola Smith, U.S. Trade Commission, Shanghai, China



MACAO, the oldest outpost of Europe in its intercourse with China, is passing through a period of development which promises to make it one of the most prosperous and advanced of the foreign colonies in China. Macao is situated on a small island lying west of the estuary of the River Si-Kiang in South China, about 40 miles from Canton. It was long known to European seafarers as a safe haven of refuge, and in its early period following Portuguese domination, which was established in 1540, held a proud place in the history of trade with China. Up to the time of the cession of Hong Kong to Great Britain in 1841, Macao for several centuries had been the principal trading point between China and the West, especially during the eighteenth century. When Hong Kong and Canton were opened to foreign trade, however, Macao's preeminence as a treaty port was lost and its prosperity began to decline.

Recognizing that the greatest obstacle to development was the lack of a harbor to accommodate modern vessels of large tonnage, the Portuguese officials of Macao in 1923 embarked upon a pretentious plan for harbor works and reclamation. The plan was completed in 1926, good anchorage was provided for large ocean-going vessels, and since that time a strong bid has been made by the authorities to attract commercial and industrial enterprises and particularly Chinese capital.

The main harbor improvement consists of two breakwaters extending from St. Francis Point, in the offing from Macao, to Macao-seac, which adequately provides shelter for the harbor. Access to the port is easily negotiated through a channel about 4 miles long, exceeding 300 feet in width, and extending for a further 2 miles to the east and 1 mile to the west. The channel commands a depth of 15 feet at low tide and at high tide permits the easy entrance of ships drawing up to 18 or 20 feet. Basins are dredged to various depths—18, 12, and 9 feet, enabling different types of vessels to make use of the port.

Over 5,000,000 cubic meters of mud were dredged from the harbor bed, resulting in the addition of 300 acres of reclaimed land. The port area, accordingly, has increased to 1,750 acres, as compared with 1,250 in 1920. The new port, and the many contingent improvements, including reclamations in the inner

and outer harbors at Taipa, cost upwards of 10,000,000 Mexican dollars.

A broad, level highway is under construction, connecting Macao to Shekki, a distance of 35 miles. Shekki is a thriving trade center which taps a large agricultural area in the Heung Shan district of Kwantung Province, and this highway will provide an outlet for its wealth of products through the port of Macao. Upon the completion of the highway in about three months' time, a bus and truck service is to be inaugurated. This, with other contemplated highways out of Macao, should offer good opportunities for sales of motor cars and trucks.

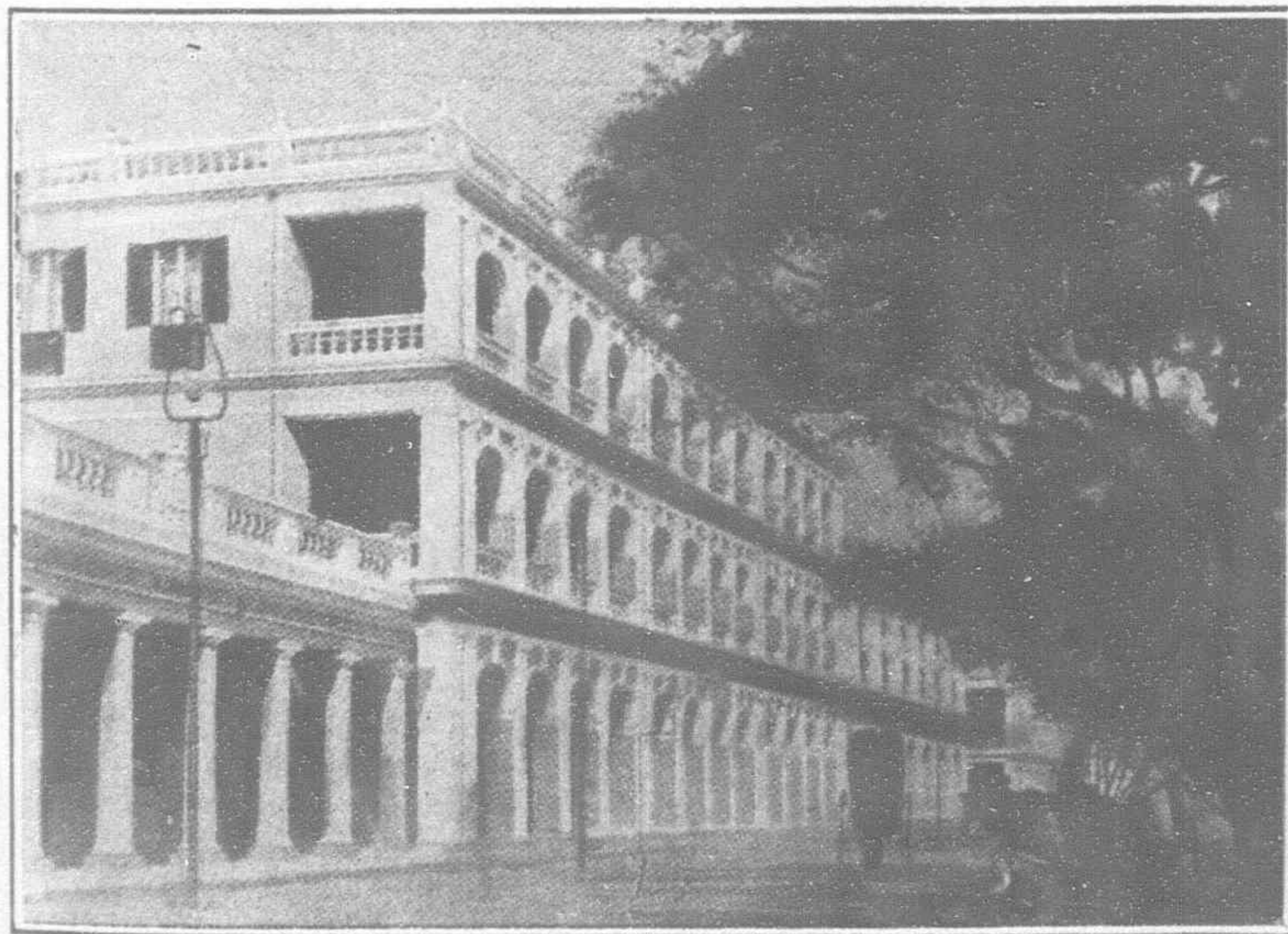
The impetus provided by harbor improvement was well reflected in new building construction in Macao during the past year. Rapidly nearing completion is a modern seven-story hotel of reinforced concrete with a facing of imitation granite. The hotel is a good example of modern architecture and, towering 50 feet above surrounding roofs, offers an excellent view of the entire city and harbor.

Other building construction is progressing and the new roads in the city have resulted in many new residential projects. A race course, opened in March, 1926, is attracting many visitors to the colony. A waterworks and sewerage plant for Macao is proposed.

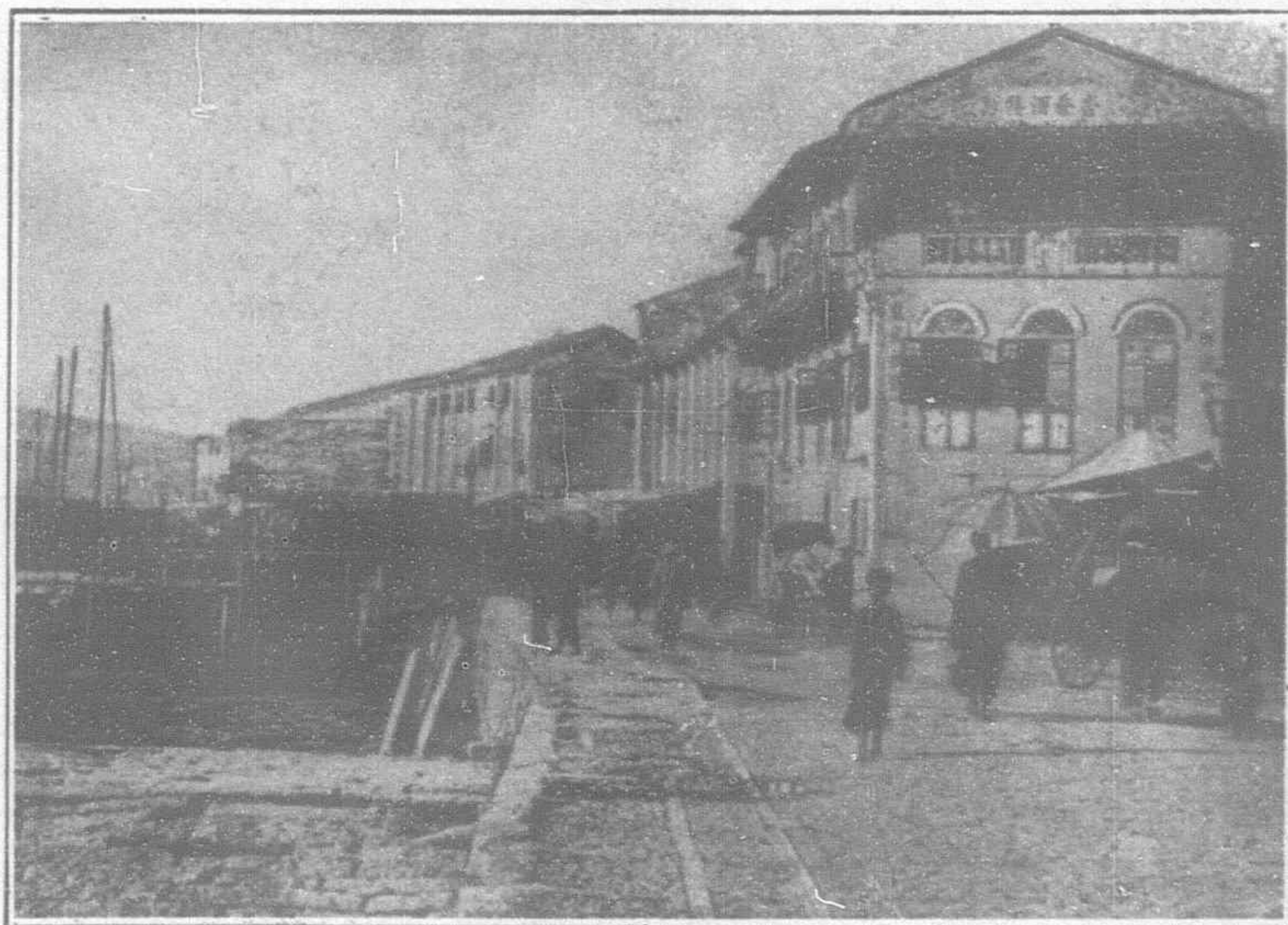
The population of Macao is reported to have doubled since early in 1927, and at the end of that year reached a total of 160,000. Of these, 3,864 were Portuguese and 591 other foreigners.

Macao's general trade reached a total of 50,000,000 Mexican dollars during 1927, and a satisfactory growth is prophesied for 1928. (Mexican dollar averaged \$0.4503 in 1927.) A very successful commercial fair was held at Macao in 1926, which was reported to have scored a success, both financially and for the furtherance of propaganda. Plans are now under way for opening another and larger fair in 1929. A commercial museum recently has been established, and the colony within the past year has taken advantage of every possibility to attract the outside world and to establish itself as a center of trade and as a popular pleasure resort.

* Commerce Reports.



The Macao Hotel



Praya of Macao

Developing Wireless in Japan

FOR the first time in the history of Japan, a wireless company was established in the fall of 1925 under the management of a semi-official company known as the Nippon Musen Denshin Kaisha (The Japan Wireless Company).

The Government in Japan exercises a strict supervision over all forms of wire or wireless communications, including telephone, telegraph and radio. This monopoly by the Government makes impossible free wireless contact with foreign countries.

The Japan Wireless Company establishes stations and undertakes wireless enterprises for the Government, receiving in return 90 per cent. of the revenue fees received from all telegraphic activities.

With the development of international wireless communications the need for high power electrical waves has come to be felt more necessary of late, and countries of the world are competing for the establishment of large powerful wireless stations. For international communication it is necessary that wave lengths should be between 8,000 and 30,000 meters; but in order to avoid interference in wireless communication no more than 134 different wave lengths could be successfully utilized for this purpose of which only 67 different wave lengths between 10,000 meters and 20,000 meters are the most efficient.

In other words the most efficient wireless stations for international communication are limited to only 67. Hence the keen competition among the countries of the world.

Japan should not be left behind in this international wireless competition and must build large stations so as to acquire the privilege of using the efficient wave lengths, and obtain as many as possible of the privilege of international wireless communications in the future.

Because of the impossibility of setting up large stations due to financial difficulties, the Japanese Government in May, 1925, passed the following regulations concerning the organization of the afore-mentioned Japan Wireless Company:—

The Government's Iwaki Wireless Station for the sole purpose of communicating with the United States (valued at Y.2,110,000) and the sites in Mie and Aichi Prefectures on which stations to communicate with Europe were to be established by the Government (in all valued at Y.190,000) were to be contributed by the Government to the Japan Wireless Telegraph Company.

In return this company was to offer 46,000 Y.50 shares (fully-paid) to the Government.

The said company need not declare dividend for ten years for the shares of the Government, but must pay the Government a portion of its profit when it could pay 8 per cent. dividend to its civilian shareholders within the said period.

When the dividend paid to civilian shareholders exceeds 12 per cent. per annum, half the excess to be paid to the Government.

Under these regulations the Japan Wireless Company was established with an authorized capital of Y.20,000,000, Y.6,725,000 of which was paid up.

The business results of the first three terms ending March, 1927, are as follows:—

		INCOME		
		1st term	2nd term	3rd term
Business income	.. ..	Y.423,814	Y.528,817	Y.570,509
Interest on income	.. ..	130,362	142,082	132,997
Sundry income	.. ..	867	2,341	1,834
Total	.. ..	Y.555,045	Y.673,241	Y.705,341
		EXPENDITURE		
Business expenditure	.. ..	Y.252,972	Y.249,302	Y.262,286
Profit	.. ..	302,070	423,938	443,054
Sinking fund for machinery	.. ..	53,064	51,350	83,068
Sinking fund for new enterprises	.. ..	29,045	50,868	—
Net Profit	.. ..	Y.219,961	321,720	359,968
Dividends declared	.. ..	7%	7.2%	7.2%

The Japan Wireless Company has to make improvements on the Iwaki Station contributed by the Government and also has to establish stations for the purpose of communicating with Europe. As wireless communication develops and becomes more important, the company will be under obligations to renew, when necessary, worn or out of date apparatus.

Up to the present time wireless communication with the United States is being done through the wireless station in Hawaii. Consequently two-thirds of the total revenue derived from the fee of telegrams to the United States handled by the company go into the treasury of the American stations. Out of the remaining one-third the company receives only 90 per cent.

In order to overcome this handicap the Japan Wireless Company must improve their station at Iwaki and thus obtain direct communication with the United States.

As soon as the company was organized, it started the work of improving the wireless receiving station in Harano-cho and the

work is to be completed by the spring of 1928. The company has also completed the central receiving station in Saitama Prefecture. These stations are to be connected by overland wire with the Tokyo Wireless Station under the supervision of the Communications Office. The work is progressing smoothly and has almost been completed.

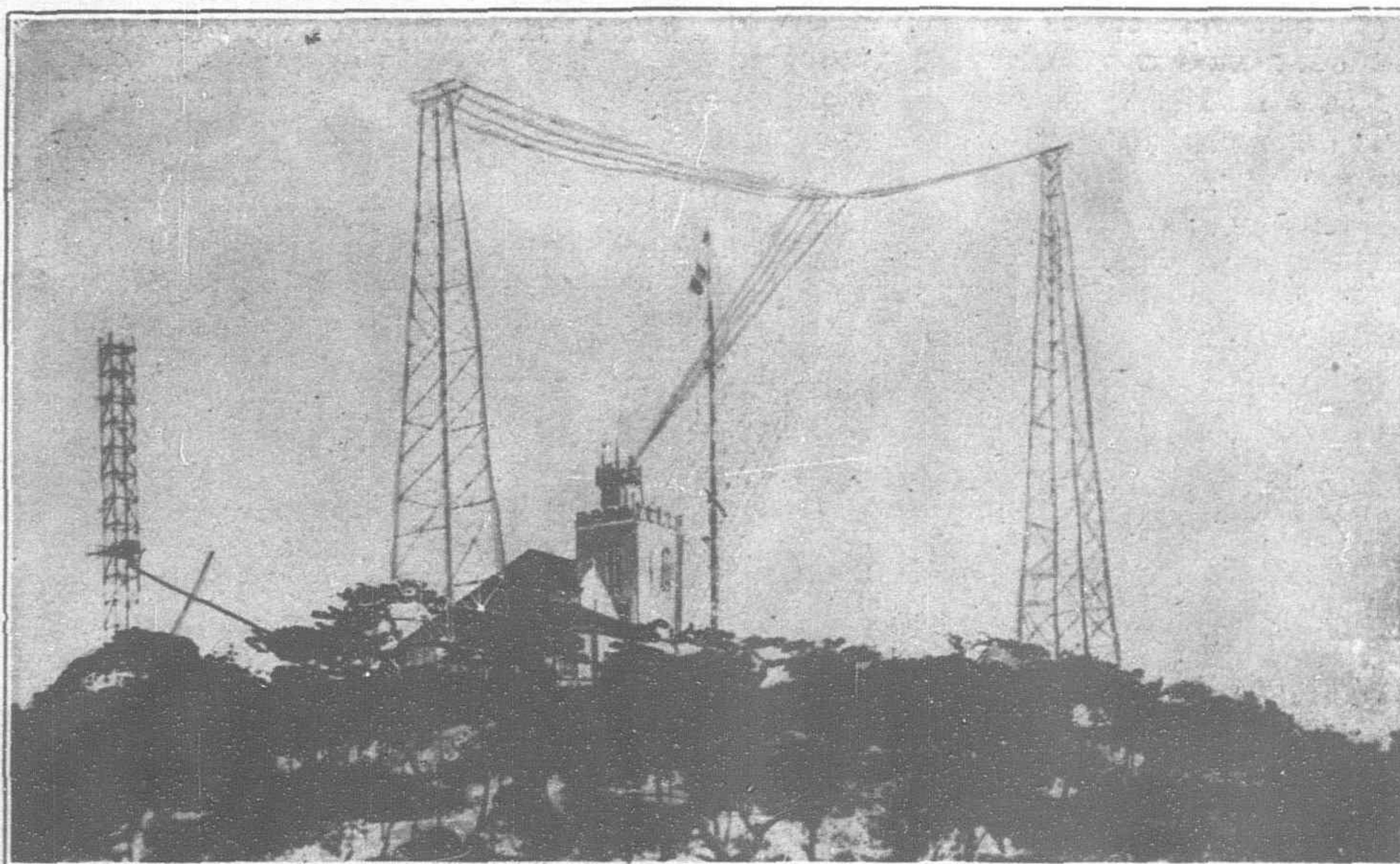
It is expected that direct communication with the United States will be possible with the completion of the work of improving the station in Harano-cho during the spring of 1928.

It is expected also that the efficiency of the stations will then be increased by two-fold. The revenue received from the sending of marconigram to the United States handled by the company, which the company is entitled to receive, will also be increased to the 90 per cent. of the half the revenue, the other half going into the United States station.

The stations for communicating with Europe are now being constructed in Aichi and Mie Prefectures (one in Aichi for sending and the other in Mie for receiving), and are scheduled to be finished by March, 1929.

The Japan Wireless Telegraph Company is also contemplating the establishment of another station for communicating with the stations in the United States and another with those in the South Seas.

Thus before long, it is expected, the company will monopolize the wireless enterprise in Japan.



Wireless Station of the Marine Meteorological Observatory at Kobe, Japan

Engineering Notes

Roads for Samshui.—The *Hsien* authorities of Samshui, Kwangtung province, have adopted an extensive program of road construction covering the next few years. The first road to be made will be from Samshui to Tsingyun.

Military Road Building.—The 26th Army stationed at Potowchen, Chihli province, has given notice that roads connecting Potowchen with neighboring towns will be constructed by the soldiers, work to start within a fortnight.

Peking-Pukow Through Traffic Delayed.—On account of the shortage of rolling stock and engines, the contemplated through express train service between Peking and Pukow cannot be inaugurated as announced by the Ministry of Communications.

Motors Cars in Canton.—According to official statistics there are at present 73 motor trucks, 58 motorcycles and 745 automobiles running on the streets of Canton. The Municipality is paying great attention to the road and has adopted strict rules for regulating traffic.

Extension of Taonan-Angangki Railway.—For the extension of the Taonan-Angangki Railway, over 2,000 workmen were sent from Yingko, Fengtien province, to Angangki a few days ago, and will start work immediately upon arrival. Work on the railway between Tsitsihar and Heiho will also begin soon.

Important Wireless Scheme.—The Government has decided to install a powerful wireless station in Shanghai, with branch stations in Yunnan province, Sian, Shensi province, Hankow, Nanking, Canton and Sinkiang. The plan is said to be on a large scale but details as to machinery and equipment are not yet available.

Communication Program.—The Minister of Communications has proposed the following for the purpose of national development. 1. Installation of long-distance telephones. 2. Establishment of factory for the construction of railway engines. 3. Installation of wireless communication throughout the country. 4. Territorial division of the country for the construction of railways. 5. Institution of steel mills and dockyards.

Radio in China.—According to the proposed plan for the establishment of a National Radio Communication System to be submitted by Mr. Wang Peh-chun, Minister of Communications, for discussion and approval at the forthcoming National Communications Conference, the whole country will be divided into four districts, with broadcasting stations in various important centers of the districts numbering 77 in all. The power of the stations ranges from 150 watts to 500 watts. In addition to these stations, six short-wave radio stations will also be erected in different parts of the country for communication with the outside world.—*Kuo Min News Agency*.

Wireless Telephones in Chekiang.—To improve the intelligence service in the various districts and cities of the province, the Chekiang Provincial Government has formulated an extensive plan for the installation of long-distance telephone service connecting the different districts and cities. The following four main lines will first be installed:

First line to link up Hangchow, Yuhang, Wukang, Wuhing and Changhing, covering a distance of 250 *li*.

Second line to link up Yuhang, Linan, Yucheng, and Changhwa, covering 133 *li*.

Third line to link up Hangchow, Chuchi, Shinghsien, Sinchang, Tientai, Linhai, Hwangtao, Wenling, Haimen, Lohching and Yungchia, covering 1,254 *li*.

Fourth line to link up Chuchi, Iwu, Lanchi, Tanchi, Lungyu and Chuchow, covering 332 *li*.—*Kuo Min News Agency*.

Broadcasting at Nanking.—For the dissemination of propaganda relating to the Nationalist Government, it has been decided to erect a broadcasting station at Nanking from which news will be spread throughout the country.

Telegraph Administration in Kiangsu.—Improvements have been made in the telegraph administration of Kiangsu province and monthly receipts have doubled. The present program is to open branch offices in all *hsiens* hitherto not connected by telegraph.

New Roads for Nanking.—As the casket of Sun Yat-sen will soon be moved to its future burying place at Tze Chin Hill in Nanking, two new roads will be built to that point from Hai Lin Gate and Shen Tse Gate. The roads will be 160 feet wide and 6 miles long. They are to be finished in four months at a cost of \$1,600,000. Construction will be under the supervision of the Mayor of Nanking.

Wireless in Manchuria.—The installation of wireless stations in Manchuria started with the transfer of the Russian wireless station in Harbin in 1925 to the Chinese authorities. Since then stations have been installed in Fuchin, Yenki, Heiho, Manchouli, Kirin, Tsitsihar, Changchun, Newchwang and Mukden. The annual expenses for these stations are \$400,000, but receipts barely reach \$100,000. The stations are under control of the North-eastern Wireless Department.

Canton-Hankow Railway.—The Canton-Hankow Railway is of three sections, from Wuchang, Hupeh province, to Chuchow, Hunan province, about 200 miles, being already completed. The southern section, from Canton to Shaokwan, 136 miles, is also built. The central section, from Chuchow to Shaokwan, about 200 miles, remains to be built. The section passes through mountainous country, where a part of the embanking has been done. The cost of building this section is estimated at \$30,000,000, which the Canton Government propose to raise from the merchants of Canton. Preparations are being made to commence the work, which, with the aid of soldier labor, may be completed next spring.

Telephones for Chekiang.—To improve the intelligence service in the various districts and cities of the province, the Chekiang Provincial Government has formulated an extensive plan for the installation of long-distance telephone service connecting the different districts and cities. The following four main lines will first be installed: First line to link up Hangchow, Yuhang, Wukang, Wuhing and Changhing, covering a distance of 450 *li*. Second line, to link up Yuhang, Linan, Yucheng and Changhwa, covering 134 *li*. Third line to link up Hangchow, Chuchi, Shinghsien, Sinchang, Tientai, Linhai, Hwangtao, Wenling, Haimen, Lohching and Yungchia, covering 1,254 *li*. Fourth line to link up Chuchi, Iwu, Lanchi, Tanchi, Lungyu and Chuchow, covering 332 *li*.

Commercial Air Service for Canton.—The General Chamber of Commerce of Canton has decided to operate a commercial air service with a capital of \$200,000, divided into 10,000 shares of \$20 each, to be paid in four instalments of \$50,000 each. After the first payment two hydroplanes, each capable of carrying four passengers and several tons of cargo, will be operated between Fatshan, Tsengshing, Shiuhing, Taileung, Sainam, Kongmoon Sheklung, etc. After the collection of the second instalment, a larger hydroplane will be added to the service, which will be extended to Hongkong, Amoy, Macao, Foochow, Shanghai, Nanning and Wuchow. After the third payment and the purchase of another plane Northern ports like Nanking, Hankow, Kiukiang, Changsha, Tientsin, Chefoo, Tsingtao and Newchwang will be included in the service. With the addition of a fifth plane it is hoped to connect up with foreign ports like Singapore, Soerabaya and those in Siam, French-Indo China and the Philippine Islands. Only Chinese citizens will be allowed to invest money in the enterprise.

Otamagawa Suiryoku Denki K.K. (Otamagawa Hydro-Electric Co., Ltd.) A new electric power company is being promoted by Seiji Kimura, of Oura Mura, Ishiki Gun, Fukushima Prefecture, and 26 others. The company has water rights at Akai Mura and Nagato Mura in Ishiki Gun on the Otama River, granted on May 18. The new company is to be capitalized at Y.700,000; number of shares 14,000 (face value, Y.50 a share), of which 9,700 shares to be allocated among promoters, balance 4,300 shares for public subscription.

The intake is to be constructed at Takahagi in Akai Mura, and the power plant at Nagai in Nagato Mura. Length of the waterway will be 2,000 ken (or about 364 meters), effective head 404 feet, power capacity 1,700,000 k.w. Construction will be started in the near future, to be completed about November next year, at a cost of Y.700,000.

Automatic Looms.—With the present capacity of 350 looms a month, Toyoda Automatic Loom Works is unable to meet the increasing volume of orders, and is now carrying on extensions to increase the capacity to 400 looms a month, to be completed before the end of this year. Next year the company expects further to increase it to 500 looms a month.

Automatic looms installed by the Toyoda Works in the past-principal mills only—include the following:

Aichi Orimono K.K. (Textile) . . 902 looms, completed June, 1928
Kawachi Boseki K.K. (Spinning) 500 " " July, "
Osaka Godo Boseki K.K. (") 1,500 " now under installation.

Other spinning and weaving companies, such as Toyo Boseki, Dai Nihon Boseki, etc., are experimenting on several looms manufactured by Toyoda. Results are considered satisfactory and orders are expected in the near future.

Sales price of Toyoda Automatic Loom is reported at Y.600 a loom for 42-in. width, Y.30 higher per every inch wider.

According to investigations made by the Japan Cotton Spinners Association, there are about 7,000 automatic looms out of 70,000 looms used by its members, being 10 per cent. The operating efficiency of these automatic looms, however, is 33 per cent. of the total.

The standard motion of the Toyoda Automatic Loom is 200 revolutions per minute, compared with that adopted by English weavers, 160 r.p.m. Some companies in Japan are operating at 260, but this is considered too fast to ensure even qualities, in the case of Toyoda loom.

Singapore Dock.—Insurance arrangements have been completed in London to cover the voyage of the new floating dock from the Tyne to Singapore. The towage presents problems of peculiar difficulty, and elaborate arrangements have been made to ensure its safe passage. The start from the Tyne will be made some time during the present month, and it is expected that the journey to Singapore will occupy about four months.

The dock will be towed in two sections, each in charge of four exceptionally powerful tugs. The first section will be 465 ft. long and 172 ft. wide, the second 390 ft. long and 172 ft. wide. Although the sections will draw on an average no more than about 8 ft. of water, above the water they will show a height of about 75 ft. The exposure of so large a surface to the wind must necessarily be a source of anxiety. Arrangements have been made to ensure that the passage through the Suez Canal should be made with the least risk to the dock and the canal and with the least disturbance of the canal's ordinary traffic. It is expected that the passage of the canal will occupy about four days. The "tow" will only move during daylight, as owing to the dock's great width it will be necessary to remove all the lighting buoys during its transit. The first night will be spent in a "garage" excavated in the bank at a point between Port Said and Ismalia. On the second, third, and fourth nights the "tow" will rest at Lake Timsah, Grand Lake, and the Gulf of Suez respectively.

The eight tugs to be used in this difficult and hazardous undertaking are owned by Messrs. Smit and Co., a Dutch firm which makes a speciality of heavy long-distance towing. The tugs are two-masted and two-funnelled and in size average about 400 tons. They are not unattractive-looking vessels, although of necessity built to stand enormous and prolonged strains.

Railway Bridge in Chekiang.—Following a conference between Mr. Wang Peh-chun, Minister of Communications, and Mr. Li Hou-sen, Managing-Director of the Shanghai-Nanking and Shanghai-Hangchow Railways, it is understood that the Ministry of Communications will immediately undertake the construction of an iron bridge across the Chientang River, at a suitable point below Hangchow, to facilitate railway communication between Ningpo and Hangchow.

Local authorities have been notified by the Ministry that surveying engineers are proceeding from Shanghai to Hangchow to determine the location where the bridge is to be built.—*Kuo Min News Agency.*

Automatic Couplings in Japan.—A very interesting pamphlet has reached us from the Japanese Ministry of Railways at Tokyo, through the courtesy of Mr. S. Suzumura, the London representative, relating to the adoption of automatic couplings on the Japanese railways. We have previously referred to the inauguration of this great change, which took place in July, 1925, and which assured to Japan the honor of being the first country to carry out completely, and on a national scale, the recommendation of the International Labor Conference at Geneva in 1923. The appearance of this pamphlet is, moreover, especially opportune in view of the decision of the International Labor Conference at Geneva this month to establish a special committee to investigate the question of securing the general adoption of automatic couplings. The pamphlet sets out in detail the work of planning and organizing the change-over in Japan, and describes, with ample illustrations and statistical data, the actual carrying out of the work, and sets forth some of the results achieved. The Japanese railways used screw and link couplings from the construction of the first line in 1872, and although, shortly after nationalization in 1906, the engineers conceived the project of adopting automatic couplings, it was not until 1918 that effective steps could be taken to put the policy into force. The change has resulted in a great reduction in the number of accidents, and made possible an increase in the tractive power of locomotives and the efficiency of brake action on trains.

M.-H.R. to Become Purely Government Enterprise.—The Mukden-Hailung Railway, opened to traffic last autumn, was built with \$40,000,000 Mukden "big money," equally shared by the Fengtien provincial government and people. The Government has now decided to make it a purely Government enterprise by buying up all stocks held by the public. It is said that Mr. Chang Yin-hwai, at present acting Minister of Communications, will be appointed Director of the railway after reorganization.

Extension of Tsang-Shih Line.—As a suggestion to extend the Tsangchow-Shihkiachwang Railway in Chihli province to Ichowfu in Shantung province has met with the favorable consideration of the Ministry of Communications, the latter is sending out a surveying party to survey the section from Tsangchow to Ichowfu for reference purposes before making a decision on the suggestion. No railway between Tsangchow and Shihkiachwang yet exists, though proposals for a loan for construction have been put before many groups of foreigners in recent years. The route was surveyed, and earthwork, used as a road, was done as a famine relief measure, to which the British-American Tobacco Company contributed \$100,000 some years ago.

Through Traffic between Government Railways.—The Ministry of Communications has instructed the authorities of the Peking-Mukden, Peking-Hankow, Peking-Suiyuan, Tientsin-Pukow, Kiaochow-Tsinan, Kirin-Changchun and Szepingkai-Taonan Railways to devise means for immediate resumption of through traffic between these lines, in order that their receipts may grow. Through traffic between the Government railways has been suspended for a long time on account of the civil war.

Construction of Tsitsihar-Anganki Line.—An agreement was recently reached between the Heilungkiang provincial authorities and the Ministry of Communications that the provincial governments of Heilungkiang and Fengtien and the Ministry of Communications should each contribute \$400,000, the last-named in building materials, for completing the railway from Anganki to Tsitsihar, Heilungkiang provincial capital.

Guy 'Buses in Hongkong.—We learn that the fleet of single-deck 'Buses which Guy Motors, Ltd., are building at their Wolverhampton factory for Hongkong are nearing completion, and will shortly be shipped. They are 25-seaters, and will be operated by the Hongkong Tramways for first-class passenger work.

Deplorable Condition of Government Railways.—In order to stress the importance of restoring the four main railways and securing the resumption of traffic, the Ministry of Communications has compiled statistics relating to the former and the present conditions of the Peking-Mukden, Peking-Suiyuan, Peking-Hankow and Tsinpu Railways as follows:

		Rolling stock	Engines	Daily Receipts
Peking-Hankow :	Before	3,977	229	\$70,000-\$150,000
	Now	1,300	100	30,000
Peking-Mukden :	Before	4,119	221	\$70,000-\$100,000
	Now	400	19	20,000
Tsinpu :..	Before	1,688	136	\$50,000-\$70,000
	Now	1,200	100	20,000
Peking-Suiyuan :	Before	1,520	138	\$20,000-\$40,000
	Now	500	54	2,000

Program of the Ministry of Agriculture and Mining.—The Nationalist Ministry of Agriculture and Mining has published a program in connection with the development of agriculture, forestry and colonization of waste land, to be carried out in three periods. In regard to ordinary agricultural work, during the first period a national agricultural conference will be held; the subject of foreign seeds will be investigated; parasitical conditions of crops and flood and drought conditions will be examined; foreign and Chinese agricultural implements, import of fertilizers and their manufacture, and the establishment of agricultural experiment stations and exhibitions will all be looked into. In connection with forestry work, the Government will undertake the investigation during the first period of all waste land capable of reforestation, of all wooded areas, of the principal species of trees, of agricultural associations in different places, of the import and export of lumber and its business conditions and sale of forest by-products. Regulations for the protection of forests from fire and other damage will also be decided on during this period. For colonization, the first period will include the investigation of all waste land, government or privately owned; colonization conditions; foreign and Chinese methods of colonization; and the establishment of model colonization community. The first period in the development of fishery and pasturing will have to do with the investigation of sea products and methods of fishing; breeds of animals and the methods of raising them; diseases of animals and their cure. Fishing regulations as well as regulations for the inspection of animals will be published.

During the second period, the program calls for the establishment of a bureau of statistics for agriculture, import of good foreign seeds, improvement of agricultural implements, experimentation of fertilizers, prevention methods of flood and drought, establishment of agricultural schools and experiment stations, and co-operation with the international agricultural association. For the colonization and development of waste land a bank will be opened and a special bureau will be established by the Government for the purpose, regulating colonization methods. The work in forestry during this period will be the compilation of statistics on forest conditions and reforestation work, training of forest rangers and the establishment of a central forest experiment station. In connection with fishery and pasturing, there will be a fishery experiment station as well as a place for the development of better breeds of animals.

During the third period, the Government will undertake to open factories for the manufacture of fertilizers and agricultural implements. A weather bureau will also be provided for the benefit of the farmers. Colonization and development of waste land during this period will be on a large scale. Results of public and private work will be investigated and rewards given accordingly. Forestry work will be developed according to the policy of making it national in feature. The Government will operate a model lumber mill. For the encouragement of better breeding of animals an annual exhibition will be held. A veterinary hospital will be opened by the Central Government.

Long-Distance Telephone.—Preparations are being made by the Chinese authorities for the installation of a long-distance telephone service between Paoshan and Tachangchin. The proposed line will be 26 miles long and will connect all villages within the limits of the Paoshan District.—*Kuo Min News Agency*

Hokkaido Dento K.K. (Hokkaido Electric Light Co., Ltd.)—Originally Hokkaido Dento had supply districts only in part of the Hokkaido: Ishikari, Kushiro, and Kitami Provinces, but later it extended its influence in Akita Prefecture in the Main Island. At present electric lights installed number more than 508,000 and power supply amount to 35,000 k.w.

In the Hokkaido the company has been competing vigorously with the Hokkai Suiryoku Denki K.K. (Hokkai Hydro-Electric Co., Ltd.) which has franchises bordering on the company's districts, but these two companies have recently agreed to adjust supply limits between them. Hokkaido Dento (which belongs to the Fuji Seishi interests) has bought supply rights in Ebetsu Machi and Iwamisawa Machi belonging to the Oji Seishi K.K. (Oji Paper Mfg Co., Ltd.) and instead sold rights in Hiroshima Mura and Eniwa Mura in Ishikari Province to the Hokkai Suiryoku (of Oji Seishi interests). In addition, Hokkaido Dento cancelled its merger contract with the Sapporo Soden K.K. (Sapporo Power Transmission Co., Ltd.)

This company has a power capacity of 6,500 k.w., including 2,300 k.w. hydro and 3,700 k.w. steam (Naeho Steam Power Plant), and has supply rights for power of over 50 h.p. per unit in Sapporo City which is the center of Hokkai Suiryoku. There will be no more competition between the two companies as this merger has been withdrawn.

Consumption of electric power in the Hokkaido has been steadily increasing. The company has 33,000 k.w. capacity in the Hokkaido, including Antaroma Power Station and others, but in order to meet growing supply it has decided to develop more water power at Kamikawa and Kami Akubetsu. Kamikawa is on the upper reaches of the Ishikari River, located above the present Antaroma Station, and is to have a capacity of 11,000 k.w. Construction is to be completed in September next year, at a cost of Y.4,600,000. Kami Akubetsu Power Station is located on the Akan River which flows out from Akan Lake in Kushiro Province, capacity 4,000 k.w., construction cost estimate at Y.1,600,000, to be completed in November next year. Power from this station is to be supplied in Kushiro, Kitami and Tokachi.

Steam power plant at Fukagawa Machi (equipped with diesel engines) will be changed for hydro-electric power plant and two smaller companies in the vicinity will be absorbed, Asahikawa Suiryoku Denki and Hokkaido Godo Denki (in Rumoe and Masuke Machi, etc.). In Akita Prefecture supply is also gradually increasing.

Consumption of electric power in the Hokkaido is comparatively high. Average power per light is 20 watts, charges about 80 sen per light per month. Profit for the first half this year amounted to Y.2,572,000 or 15.5 per cent. of the paid-in capital and a dividend of 12 per cent. was paid. Business results for the second half are expected to be about the same, though nights are shorter during the summer season.

Fixed assets of the company are valued at Y.42,400,000 (exclusive of constructions now in progress). To write this off in 40 years, a depreciation of Y.1,060,000 a year is necessary, or Y.530,000 a term, while present depreciation is Y. 300,000 a term.

The company has bought 22,000 shares of the Fukushima Dento K.K. (Fukushima Electric Light Co., Ltd.), with a view to taking over the management of the company in the course of time. Fukushima Dento has supply districts in Fukushima City, and nine Gun in Fukushima Prefecture, and part of Miyagi, Yamagata, Ibaraki and Tochigi Prefectures. It is capitalized at Y.11,930,000, of which Y.11,621,000 is paid in. Lights installed number about 330,000, power supply about 6,000 k.w. This company has been cooking up dividends for a long time, under the presidency of Shutaro Yoshino, who recently was involved in a bill scandal with the Fukushima Bank (also presided by Yoshino). He drew a bill of Y.3,730,000 under the name of Fukushima Dento, led his Bank to bankruptcy and his company into trouble.

Hokkaido Dento is endeavoring for reorganization of Fukushima, but is confronted with some difficulties as a group of Fukushima Dento interests is strongly opposed to the plan. Under the circumstances, it will be some time before adjustments can be completed.

New Construction by the S. M. R.—For the extension of the business of the S. M. R., it has been decided to build a new wharf and depôt in Dairen, and to electrify the section of the railway from Fushun to Mukden.

Conservancy of Hsuehchow Waterways.—Through long neglect the drainage system of Hsuehchow and neighborhood, Northern Kiangsu, has been blocked by silt and the districts on the low lying plain of Hsuehchow, including Siaohsien, Fenghsien, Suining and Sinpichow, have become subject to periodic floods. Last year the crops were greatly damaged by a week's incessant downpour. Hsuehchow authorities are dredging the local streams this year, some of which were entirely silted up. The program covers sixteen local streams, including the old bed of the Yellow River. Work has already been started on some of the more important.

Aerial Navigation for Fukien.—Prominent Fukienese merchants in the Philippine Islands recently organized an association for the promotion of aerial navigation in their native province by establishing a commercial line from Fukien province to Shanghai and opening a school for the training of pilots. The secretary of the association was sent to China last month, and upon the recommendation of the French Consul in Canton has made a contract with a French aeroplane factory in Shanghai for the purchase of 2 commercial aeroplanes, 5 experimental aeroplanes and 3 hydroplanes at a cost of \$150,000. The landing field in Fukien province has not been decided upon, although Changchow has been suggested. The training school has been definitely located at Amoy. In two months there will be 50 students from the Philippines to enter the school. The staff will consist of 2 aeronautical engineers and 5 pilots and the monthly expenses will be about \$10,000. As soon as these students have graduated, other lines will be opened to Canton and Swatow. This project has the warm commendation of the Government in Nanking and of the Fukien Provincial Government as well as the business people of the province. Hwang I-chu, a prominent business man of Amoy, has promised to contribute two aeroplanes to show his interest in the promotion of aerial navigation.

Kweiyang-Nantan Road.—According to official reports construction of the road from Kweiyang to Nantan, Kwangsi province, is progressing rapidly. People of the *hsiens* through which the road passes volunteered to build their own sections, and in less than two months Lungli, Maha, Tuyun and Tuhshan have finished their part of the work. On account of bridging and mountainous country, Kweiting and Pingyueh are having more difficult work, but, with the help of the Bureau of Roads, these sections will soon be finished.

British Engines in Japanese Customs Launches.—Following on the recent installation in Japanese customs launches of the British-built Ailsa Craig Kid $\frac{10}{16}$ h.p. and Silent Seven $\frac{7}{12}$ h.p. engines manufactured by the Ailsa Craig Motor Co., Ltd., of Chiswick, London, a correspondent from Tokio reports that the Japanese Customs Department have expressed their satisfaction on the excellent results obtained with these engines, particular reference having been made by the officials to their exceptionally smooth and silent running.

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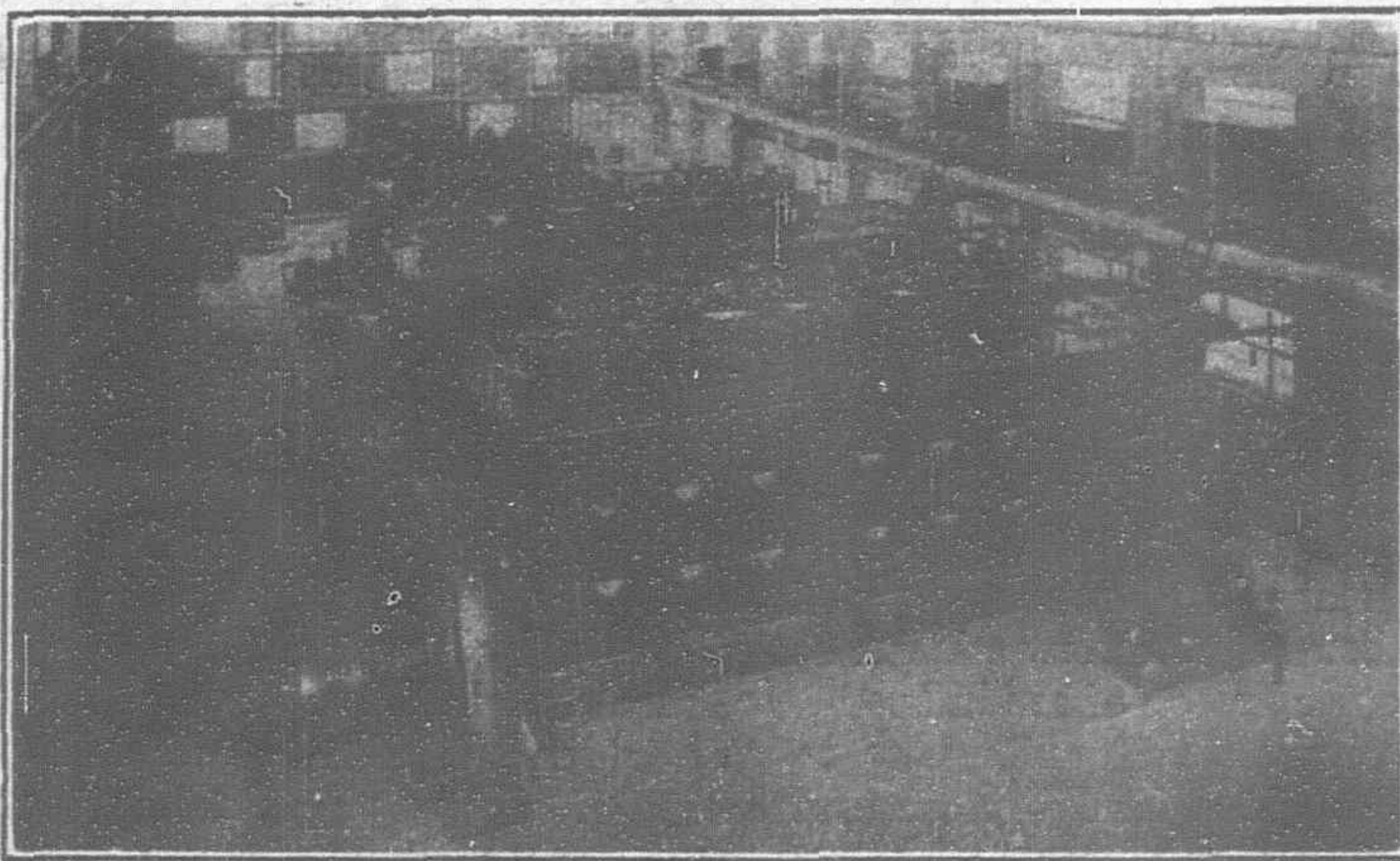
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Telegraphic Address
"SULZEBROS" SHANGHAI
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